

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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Settlement or an Expedient?

AS THE end of the second month of the dual coal strike approaches interest increases as to the form the ultimate solution will take. For anthracite the alternatives apparently are clear—either the operators and the men will get together on the basis of a wage somewhere between the 20-per cent increase demanded by the miners and the 21-per cent decrease demanded by the operators, or the third party will step in, either by invitation or by right of public necessity. No one appears to expect resumption of hard-coal mining before July 1, and the conservative say Aug. 1.

With respect to bituminous coal the situation is more complicated, with the possibility that the otherwise simple conditions surrounding the hard-coal negotiations will be involved. Should the dictates of internal policy and politics in the United Mine Workers demand the continuance of the hard-coal strike to help win the bituminous-coal strike, we may feel chilly this winter.

Two possible—and only two—solutions to the trouble in the bituminous coal areas are in sight. One of them contemplates a weakening of the miners followed by local settlements, to which must be added the possibility of the weakening of operators. There are many such who, running true to form, may reach the point of conceding a wage that will tempt the miners locally to withdraw from the all-embracing policy of the international officers of the union for national wage agreements. High prices will tempt some to any course.

The miner, however, is pretty thoroughly imbued with the belief that he is striking to preserve his union, and for that he will fight long and hard. To save his organization he will hold out long after he would give in on a straight-cut matter of wages. There are yet in the ranks sufficient of the old-time miners and there persists enough of the old-time spirit to hold their forces intact for a long struggle. What the union may lose in defections in West Virginia will be more than made up by gains in Pennsylvania. So long as the officers of the union can hold before the men the necessity of a four-state settlement as the only alternative to a breaking down of their organization, they will be able to maintain the morale of the men.

As a prerequisite to settlement there must be the beginning of negotiations. Since the union demands such a beginning on the basis of interstate conference and the operators refuse that method, we have a stalemate in the bituminous-coal situation.

As a second avenue, apparently the only other, is the interjection of the third party—the public through the government. At the present writing this is generally conceded as the more likely outcome. Just when the government will feel warranted in issuing one of those not-to-be-refused invitations can only be guessed, but the time is yet some distance away.

Patently the miners have the most to gain by delay.

It was coolly calculated policy that postponed the formulation of their demands on the operators from September, 1921, to February, 1922. They were betting on the upturn in industrial conditions. They lost. They are betting on the same hand again, but now things are coming their way. Business is gaining. When, some time this summer, stocks are reduced to that irreducible minimum, when non-union production has reached its maximum, and when demand for coal becomes insistent, then something or somebody must give way. That time may come by the first of July, possibly not until August or even later, but come it must.

When the government seeks to effect a settlement the union will have won, because that process will mean nothing less than a consideration of settlement on a national basis, removing as it were the present apparently insurmountable barrier of legal prohibition of operators meeting with the miners on that basis. Furthermore, by the time negotiations are begun there will be an excellent prospect of heavy demand, good prices for coal and less pressure for wage and cost reductions.

The net result may then well be that more than at any time in the past the union bituminous-coal operators will find themselves between the two millstones of non-union competition and the United Mine Workers. The union operators have no unified policy, no solidified economic background, no co-ordinated preparation for meeting the miners when the meeting comes. Unless some way is found to overcome these vital shortcomings, the settlement they will derive will be one of expediency—one that will react to leave them in no better, if not in worse, condition a year or two hence.

Heads I Win; Tails You Lose

PLAYING the game both ends against the middle is great stuff when you can get away with it. Here we have a dual miners' strike, called it is professed, in one instance, because of inability to get into conference with the operators and in the other instance apparently because the operators have joined in conference.

The United Mine Workers tell us that the soft-coal miners have suspended operations because the operators refuse to meet in joint negotiations to discuss a national wage scale. The widely heralded protests against the declared policy of the operators for local settlements, as voiced by Mr. Lewis and other spokesmen for the union, are intended to convince us that nothing else stands in the way of a settlement of the controversy; that the men are ready to work provided the operators will concede this—to them—vital point.

Secretary Davis makes much of this point, taking the position that the bituminous-coal operators are responsible for the closing of their mines because they object

to this particular form of meeting with the miners. In fact, if we read but one part of what the union, Secretary Davis and the unofficial spokesmen for the union have to say on the strike—that is, the part dealing with bituminous coal—we could be led to conclude, as many have, that nothing else is involved.

He who lets himself into this conclusion is being led astray. The union, of course, seeks as a prerequisite to actual wage negotiations the submission of the operators to national wage scales, but were that conceded today the solution of the controversy would be but little nearer. In the anthracite region there is involved no such question of policy. Here is a straight question of wage. True there are some score of supplemental demands, involving mainly minor matters of working conditions, but they are all of small moment. The real question in the anthracite negotiations, which have been in continuous progress since March 15, is that of wages. If here, with no major issue of policy confronting them, the conferees can make no progress in two months—a small, compact conference, with unified leadership on both sides unable to record an inch of progress—what right have we to assume that were the soft-coal controversy stripped of the important question of form of agreement and the check-off, the twoscore fields could make any greater progress; that the miners have conveyed the true situation to the public when they blame the bituminous coal strike on the alleged “broken contract” of 1920?

If you meet with the miners, or don't meet, the result is the same—a strike.

What Facts the Public Wants

THE real cry for facts, apart from mere propaganda, comes from men who want an itemized bill showing where their coal money is going. Even the plumber segregates time from material and gives us an idea as to what we pay for each. But when the householder—and he is the vociferous objector—gets a bill for coal he does not know how much the operator gets, how much goes to the railroad and how much is taken by the coal dealer. It is bulked together. He does not know that the freight is in many instances a bigger charge than the coal itself. He does not realize how much work is expended between the breaker or tipple and the cellar, and how greatly this adds to the cost.

The manufacturer pays his own freight bill and consequently he knows how much he pays for bituminous coal, and wherever the price has not been boosted by extravagant bidding he realizes that the rate charged for the coal is as reasonable as the wage scale permits. When he has men out fighting to get coal he also knows why the price is high and is not surprised. Consequently in times like these the manufacturer utters not a word of complaint, except, perhaps, about railroad charges.

But the householder is not so silent, for he has no knowledge as to what he pays for coal, for freight and for handling. If he had this information he would feel he had the “facts”—the facts regarding his own purchase. It would be in his hands, not in musty bulletins. It would be served to him when he wanted to know about it. It would be short and to the point. At present he does not know that the price doubles and even trebles between the mine face and his cellar. Other articles increase in cost in the same way and many in a much more extraordinary fashion. We are told that oranges

in Hayti are sold at ten for a cent—so cheaply as to be practically given away. The price in the United States is to all intents freight, wastage, marketing and handling—and nothing more. The oranges themselves don't figure at all in the price.

If we would question the service of the railroad and retailer it might be well to bethink oneself of the difficulties, labors, costs, lost time, etc., that one would face who journeyed to the mine to get it. But the miracle of transportation on which our forefathers dilated so wonderingly is a matter of course today. Costs of carriage kept falling and we did not realize that they must tend, like all things, to reach a minimum and must increase thereafter if other values became inflated.

Power Drilling

ONE cannot understand why the miner is so unwilling to accept a lowered rate per ton loaded where the electric drill is used. Now that the work of undermining has been committed to the cutting machine, drilling is one of the hardest of mining operations still left to hand labor. Why should miners continue unwilling to allow this part of their arduous work to be undertaken by machinery, as is all heavy labor in other occupations than mining?

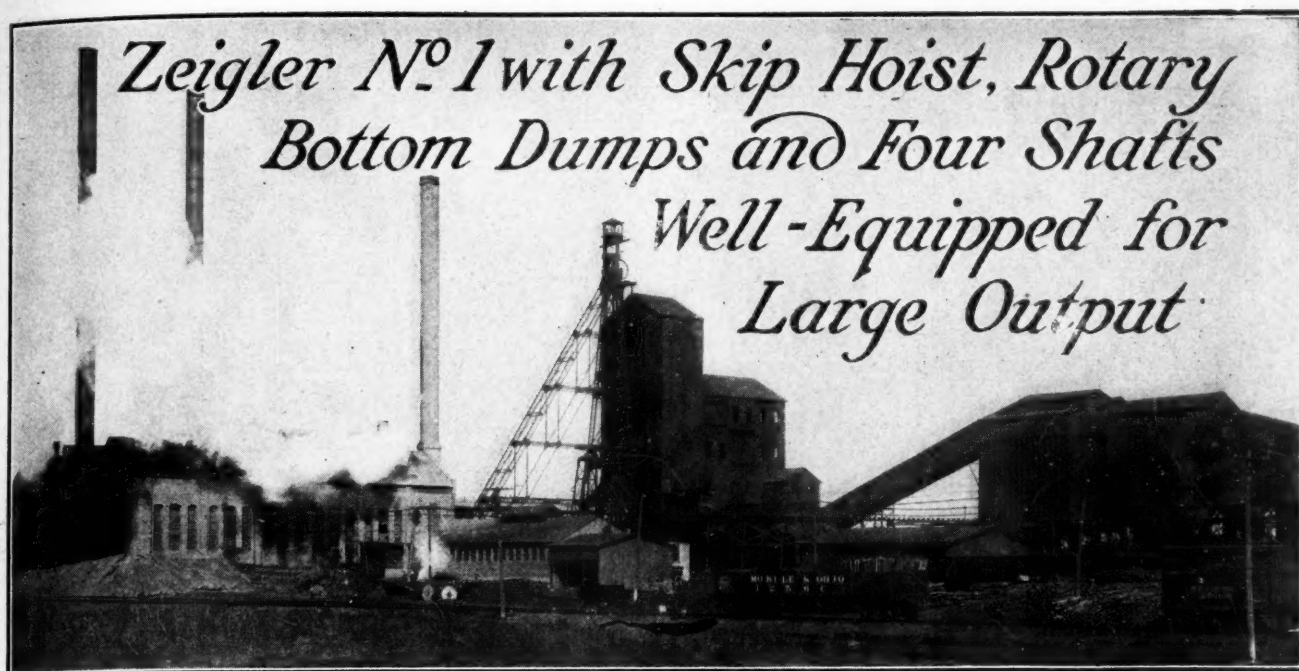
In the anthracite region many men already own their own jackhammers. The company supplies the power and the men provide the drill. These men evidently realize that hand drilling is worth avoiding even at some expenditure of money.

It is in mines subject to dust explosions, however, that the drill will prove most advantageous. When experienced men, who follow instructions, drill all the holes, there will be fewer windy shots. Shotfiring will be less dangerous, and this fact alone is sufficient to commend the drill to the attention of executives.

The high wages some shotfirers receive is proof, if any be needed, of the danger of leaving shots to be fired by men who have no assurance of the depth and loading of the holes they are detonating and who are at the mercy of any unscrupulous miner who, anxious to get much coal with little labor, overextends and overloads his shotholes and uses improper or too little tamping.

With such holes properly placed and of the right length it is certain also that larger coal will be obtained. It is easier to instruct and control one or two gangs of shothole drillers, powder loaders and tampers than to indoctrinate and watch the many coal loaders that every mine employs. Shooting can never be scientific so long as it is done by so many men, among whom are not a few who cannot speak the same language as the mine officials. Perhaps no art of mining takes longer to acquire than that of shooting coal.

It is not difficult, of course, where the man is both experienced and willing and is able to understand English, but where these three qualities are lacking, drilling is likely to be done in a haphazard manner, to be dangerous and to be unsafely and unsatisfactorily done, with a waste of explosives, an undue degradation of the coal, a great risk to human life and a weakening of the roof and ribs of the mine. To mines not now rated as being dangerously dusty, and so not shooting at night, the power drill will introduce night shooting, and greater purity of the mine air during working hours will result.



*Zeigler No. 1 with Skip Hoist, Rotary
Bottom Dumps and Four Shafts
Well-Equipped for
Large Output*

First Mine in Franklin County, Illinois—Labor Tumult and Disasters
End in Sealing of Shaft—Skip Installed at Time of Opening—Bottom-
Dump Cars Replaced by Rotary Dump—Car Dispatchers for Mine Trip

BY E. W. DAVIDSON*
Chicago, Ill.

IT IS a real honor for a mine to be rated as one of the two greatest producers in the world; but such honors are not attained without travail. Zeigler No. 1 mine of the Bell & Zoller Mining Co., at Zeigler, Ill., has been through that travail. Its early years were full of heartbreak, accident, fire, war and death. It was even closed and sealed for more than a year and given up as hopeless. But the wonderful deposit of coal its shafts tapped was too rich to be abandoned forever. New brains, new capital and a new policy of mine management reopened Zeigler No. 1 in 1910, and since then it has startled the world with its performances and furnished good fuel in ten states.

The history of the mine was tumultuous from the beginning, when Joseph Leiter, a Chicago merchant king, decided there was a fortune in coal for big capital. He employed the best engineering brains he could find, searched Franklin County, in southern Illinois, with a thoroughness hitherto unexampled, and finally sank the first mine shaft in that county. Mr. Leiter was assured he had first-grade coal, so he prepared to mine and sell it on a grand scale.

The top works he built astonished the coal industry. No shaft at that time was producing more than 1,500 tons a day and many a good engineer figured that was about the limit. The Zeigler mine equipment was good for 5,000 tons a day!

"Some day in the life of those structures," said Mr. Leiter, "we'll be taking 5,000 tons a day out of that shaft. We might as well be ready." But under the Leiter management that goal was never attained. Labor trouble, for one thing, started almost simultaneously with the development of the mine. Mr. Leiter proposed to run his mine property as he

pleased, mine-union ideas to the contrary notwithstanding. Mr. Leiter figured that if he paid his men well enough and put into the mine everything that the mining engineering profession could think of to make the workings safe and comfortable, he would have no trouble with labor. He guessed wrong—most egregiously. The result was a long controversy that rose from a dispute to a fight and finally to a bloody war.

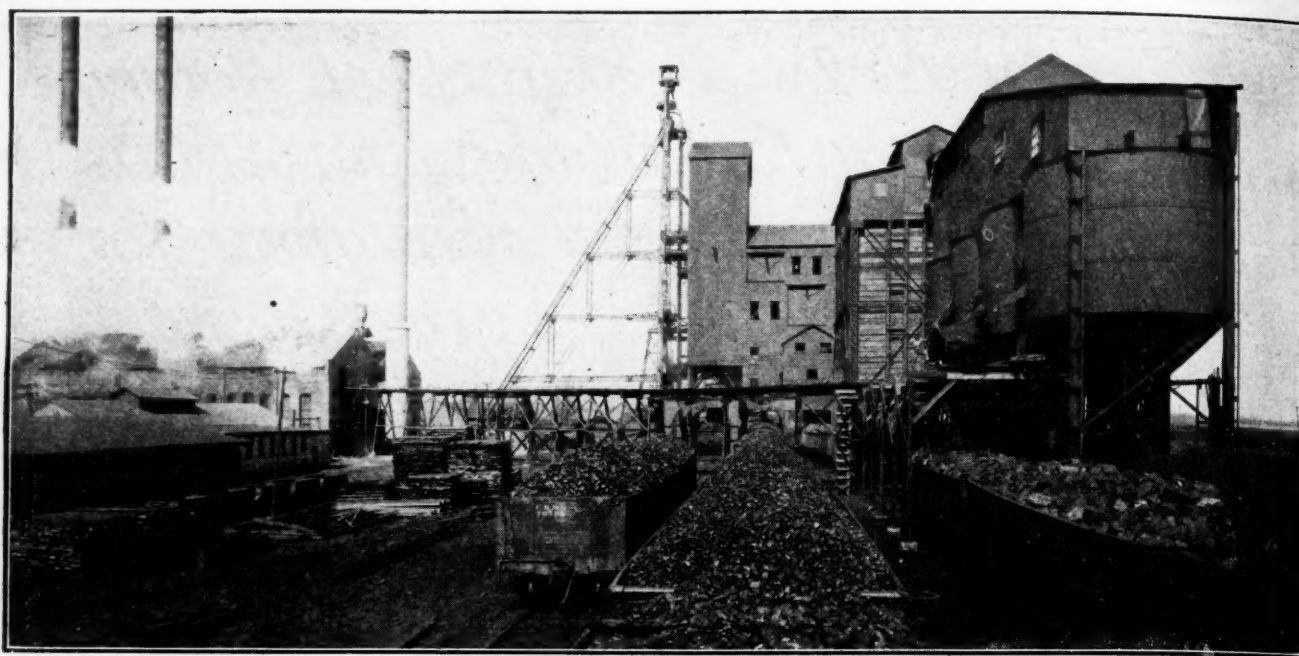
Determined to win at any cost, Mr. Leiter built a stockade around his little mine town, lined it with armed guards and machine guns and mounted on the headframe in the center of the enclosure a searchlight and more high-power guns. No man was allowed to enter the gates unless his credentials were satisfactory. No man could even approach those gates if daylight or the searchlight beam revealed him to be an undesirable. Battle and bloodshed followed until finally the government and the courts ended it.

TRIED TO SCARE MEN AWAY FROM THE MINES

But the difficulties were not all above ground. Most of them were down in the workings. There, from time to time, everything that makes mining hazardous happened. Superstitions of every sort were fanned into life to make miners tremulous. Fires of known and unknown origin damaged the works and harried operations. Explosions occurred time after time, reaping lives singly, in little groups and by scores. Finally came a series of disasters which defeated the mine operators after a continuous fight that lasted nearly a year.

In 1909 the Bell & Zoller Mining Co. acquired this property, built to be the most wonderful coal mine in the world, but then standing sealed and abandoned.

*Western editor, *Coal Age*.



ZEIGLER NO. 1 MINE AS SEEN FROM THE LOAD END OF THE RAILROAD YARD
The power plant is on the left, the unusual headframe in the center and on the right the rescreening plant with loading bins. Ten sizes of coal are shipped from this mine and 100 railroad cars per day. Coal is carried from the rescreens to the power house along a belt trestle shown in the middle ground.

The new era for Zeigler opened that year, climaxing in the month of March, 1922, when the mine, in a tremendous 27-day production race with its neighboring rival, Orient, twice broke the world's record for daily output only to lose it finally to the other mine. But in those 27 days Zeigler set the world's high mark for monthly production, hoisting 164,109 tons. Mr. Leiter's fanciful 1904 dream of some time getting 5,000 tons of coal a day out of the mine was as nothing compared to the cold facts of the mine's performance that month. It exceeded 5,000 tons every day but one and once touched 7,537 tons.

There was no town at the location of the mine when it was opened. There wasn't even a railroad. A spur had to be constructed from the nearest rail line five miles away. Thus isolated, it was necessary to establish a company village in which every foot of land and every board and nail in the buildings was owned by Mr. Leiter's company. This company plan of ownership continued under the Bell & Zoller régime until 1917, when all the real estate except the mine property itself was placed on the market. Today about 80 per cent of the homes are owned by the company's employees and a number of independent mercantile businesses are running.

Much of the equipment and machinery of the mine as originally installed in the years from 1904 to 1906 is still in operation and "did its bit" during March, 1922, toward setting the world's 27-day hoisting record, which so far overtopped the original estimated capacity. Of course it has been supplemented and the system changed in one notable instance—a rotary car dump was installed at the bottom in 1917—but in the main the mine plant is the original one.

Until June, 1921, power for all operations except hoisting was furnished by two direct-current generators, one a 300-kw. 250-volt machine and the other of 500-kw. capacity. But the distance from the generators to the working face made it almost impossible to maintain voltage. So a steam-turbine driven 750-kw. 2,300-volt alternator was installed and two motor-

generator sets, one of 200 kw. and the other of 300 kw. capacity, were established nearer the working faces. Another 300-kw. set is soon to be installed to keep up with the expansion of the workings. With all this equipment functioning, power for the outlying parts of the mine are supplied by the motor-generator sets and for the close-in sections from the original engine-driven generators in the power house.

FOUR SHAFTS SUNK TO COAL INSTEAD OF TWO

In many ways this mine presents striking differences when compared to the average big coal mine. For one thing, it has four shafts instead of the usual two. Its main shaft, built to accommodate a pair of eight-ton skip hoists, is separated by a partition from the man shaft, in which a double-deck cage operates. Thus men are lowered into and hoisted out of the mine without interfering with the movement of coal.

The original plan of making these two hoists sufficient for all purposes was given up because the shafts were too small to accommodate an ordinary mine car. When it became necessary to raise or lower a car, it had to be up-ended and put through the airshaft, which is 600 ft. from the main shaft. This entailed all sorts of arduous toil and made it difficult to handle material. So the fourth shaft—a passageway for material alone—was sunk in 1920 about 100 yards from the main shaft. Thus the mine has its skipway, its man hoist, its airshaft and its material shaft. The mine is made much safer by the presence of the two auxiliary hoists for men and material, and by the same sign the principal business of the mine—getting out the coal—is unhampered.

The idea of hoisting coal by skip instead of by raising the pit cars themselves was novel in the days when the Zeigler mine was built. There were very few skips in the country, but their service in speeding up coal hoisting and in reducing the number of cars essential was even then recognized. The introduction of the skip was considered by many engineers as the last word in mine operation. Therefore Mr. Leiter, who was

eager for "last words" for his mine, had the plan adopted.

But there were difficulties. The pit cars, equipped with drop bottoms, were drawn two by two across the open top of a concrete hopper about 30 ft. deep and of 40-ton capacity beside the main shaft. The car bottoms were supposed to spring open at the first pry of a crow-bar, dumping readily. They seldom did. A crew of eight men, usually husky negroes, each man armed with a bar and a sledge, did the dumping. It was normally necessary for a man to batter with his sledge the patent triggers along the edge of the car before the bottom dropped open. When the car had been dumped it was pushed on across the hopper to a gang which closed the bottoms by the same gentle sledge-hammer methods. As a result, a repair track leading to a blacksmith shop stood full of cars nearly all the time.

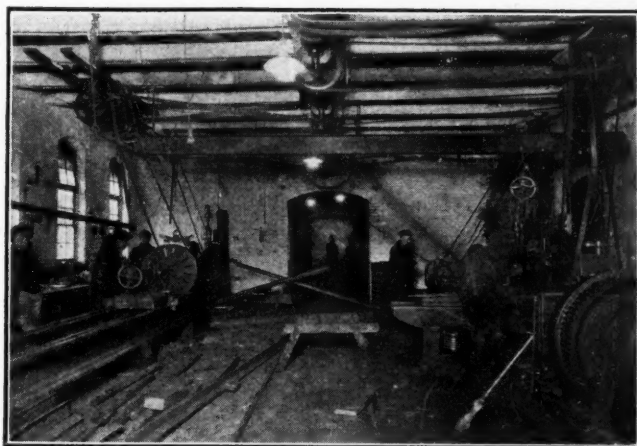
ROTARY DUMP SAVES TIME AND EXPENSE

So in 1917 a rotary dump, operated by compressed air and built from designs prepared by Allen & Garcia, was installed. E. L. Berger, one of the superintendents for the Bell & Zoller Mining Co., believes this was the first underground rotary car dump ever operated. "This dump handles two cars at a time," says he, "and has dumped as many as 1,944 cars in a shift of eight hours."

Nowadays, instead of the "wrecking crew" with sledge hammers, a single operator, handling the compressed-air ram, does all the dumping in far less time, with little effort and with no property damage.

The eight-ton skips in the main shaft are loaded at the bottom of the big hopper, where an operator about 40 ft. below the level of the dumping tracks, opens and closes with compressed air the sliding doors in the mouth of the hopper. Before the installation of the rotary dump, the skips never had hoisted as much as 4,000 tons in any one day. Since then they seldom have hoisted as little as that on days when interruptions were few, and during that feverish month of March when the great mine was exerting itself and when good luck was with it every day, the daily hoist ran from 4,100 to 7,537 tons, with an average of 6,078 tons.

At the mine bottom loaded cars are all handled on one track which crosses a track scale before it reaches the rotary dumper. Two 4-ton shunting locomotives handle the trips as they are brought in. One pushes



MACHINE SHOP FOR MISCELLANEOUS REPAIRS

On the left lathe and drill press, on the right bolt threader, planer and pipe machine. The shop is belt-driven.

the loads to the dumper, and the other, on the opposite side of the shaft, pulls the empties away, making up the empty trips on two sidings—one for each half of the mine—from which the main-line locomotives take them back into the workings.

There are twenty-seven locomotives in the service of the mine: The two 4-ton shunters at bottom, one 4-ton, two 8-ton and sixteen 6-ton gathering motors and one 15-ton and five 13-ton locomotives for haulage. The maximum grade against the load for the haulage motors is 2½ per cent and the maximum grade for gatherers is 8 per cent. Each gathering motor ordinarily serves two mining machines, no more than fourteen loaders being provided for each machine.

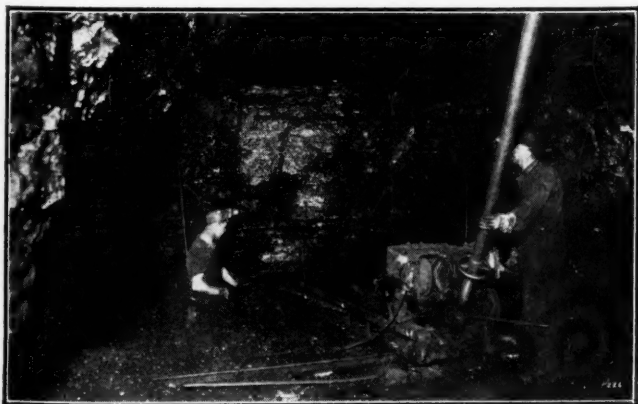
Trip dispatchers at the bottom keep a careful check on the operation of each haulage locomotive. They know the time each motor leaves a parting with a bottom-bound trip, the number of loads in the trip and the time the trip should arrive. Also they mark up the number of empties each returning locomotive takes in and know exactly when that motor should arrive at any given point along the entry. Thus, with the aid of the telephone the dispatcher on duty can spot every locomotive at any minute of the day, and if anything goes wrong with the schedule the pit boss can look up the trouble without delay.

PARTINGS AVERAGE A MILE FROM BOTTOM

The average distance of the partings—all three-trackers—from the bottom is 5,500 ft. The nearest is 4,100 ft. and the most distant, 6,800 ft. They are all located on main entries between panels. A locomotive working between the partings and the bottom handles trips averaging twenty-two cars. The range is from fifteen to forty loads.

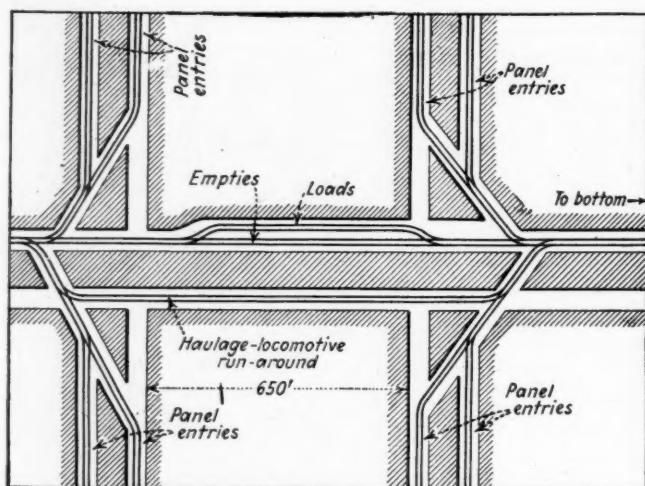
The layout of the partings and the system of handling cars through them is designed to get the greatest speed of operation with the least interference and danger. The first parting on the main entry is between the second and third panels. The second parting is between the sixth and seventh panels and so on, so that each parting serves panel entries in groups of four.

A gathering locomotive is assigned to each group of four panel entries. Running between these entries and the parting, each locomotive delivers its loads and removes its quota of empties always at the same end of the parting. Thus while motors work continually in and out of opposite ends of the parting, they never



UNDERCUTTING COAL IN THE ZEIGLER MINE

A kerf is being cut by a breast machine, the jack in the rear holding the cutter to its work. There are forty-three of these cutters in the Zeigler mine. Thirty-four of these machines are each apportioned to fourteen loaders and nine are operated by gangs of five men each. The seam in this mine runs from 8 to 11 ft. thick.



PLAN SHOWING RUN-AROUND AT EVERY FOUR PANELS
As thus laid out the locomotive always pulls the cars and does not have to push them. It can get around the trip without difficulty by running into the nearby roadway.

interfere and they never have to make flying switches or execute other risky feats of mine railroading.

The partings all have three parallel tracks so that one outside track can be used for making up trips of loads, the center track for empties and the other

outside track for passing. This layout reduces trip delays to a minimum by keeping the main lines clear practically all the time and by leaving empties always within reach of gathering locomotives.

Forty-three Goodman breast machines cut all the coal in the mine. Thirty-four of them work territories of fourteen places each and nine cut coal for gangs which average five men.

The tremendous output of this mine, after it has made the trip to the surface, is shipped in ten sizes. Large lump, 6 x 3-in.; "furnace lump," 3 x 2-in.; small egg and mine-run are all loaded by booms at the tippie. All the coal from 2-in. down, which does not go out as mine-run, is carried by belt conveyor to a rescreening plant which makes no less than six sizes. The six are "special stove nut," which is 2 x 1½-in.; "domestic chest-nut," 1½ x ¾-in.; pea, ¾ x ¾-in.; carbon, ¾ and under; inch-and-a-quarter screenings and 2-in. screenings.

In Zeigler No. 1 the coal-mining world sees a property which has negotiated all the hell-and-high-water its bitterest enemy—if it could be said that mines have enemies—could wish to see inflicted upon it, yet it has come through, and today it stands at the pinnacle of its development. Once a death trap and a place to sink fortunes, it has turned out to be a bonanza, and perhaps it has in store still further surprises for the public.

One Hundred Tons of Water Per Ton Mined

FEW, if any, mines pump as much water as the Heidelberg No. 2 colliery of the Lehigh Valley Coal Co., located three miles northeast of Pittston, Luzerne County, Pennsylvania. E. M. Florey, in the *Employes' Magazine* of the Lehigh Valley Coal Co., from which the facts of this article are derived, says that the coal beds lie in a U-shaped basin and at the shaft reach approximately their greatest depth below the surface. This shaft is located at about the center of the small valley in which the colliery has been erected. The beds crop on the floor of the valley and adjacent hillsides, and extensive mining and pillar drawing have cracked and broken the surface.

Though the surface has been ditched so as to carry off the water that falls during heavy rains or melting snows into the creek, much water enters the mines, and, during March, 1920, the heavy rains and melting snows caused a flood in the valley which made the creek back up till the floor of the valley was entirely submerged. The water naturally ran through the cracks in the ground into the mine below, flooding the Red Ash bed.

On March 15 the water in the shaft reached a height of 53 ft. and drowned out the Red Ash pumps. Consequently it was decided to place buckets in the shaft, using the 25x60-in. double engines directly connected to two 8x10-ft. conical drums. Unwatering started on March 14, but more water flowed into the mine than the hoist could remove and the water reached a maximum height of 84 ft. in the shaft on April 29, 1920. After that date the water was lowered, hoisting continuing until Sept. 15, 1920, when the depth of the water on the rail at the foot of the shaft was 7 in. The Red Ash pumps were then started.

The total cost of the six months' flood was: Labor, \$17,934.33; material, \$12,399.17; total \$30,333.50; averaging \$259.26 per day for a period of 117 days.

Another drown-out occurred in the Red Ash vein from July 15 to Aug. 13, 1921, and the buckets were

used in the same manner as during the previous flood. This cost was as follows: Labor, \$5,607.72; material, \$4,013; total, \$9,620.72; averaging \$384.83 per day for a total of 25 days.

In the above figures the cost of steam is not included because it is difficult to ascertain how much of it was used for any one of several purposes. Mr. Florey estimates that the pumps consume 95 per cent of the steam generated. However, the quantity of coal used per day varies but little, and the total cost of operating the boiler plant is practically uniform, amounting to approximately \$6,600 per month, which includes 75 tons of coal per day at \$2 per ton. The amount chargeable to pumping is 95 per cent or \$6,280. This amount should be considered in the total pumping cost.

The accompanying table by months gives the water pumped in gallons, the cost of the pumping and the tons pumped, all per ton mined. It will be noted that the cost of handling water exclusive of steam used was 74c. per ton in 1920 and 59c. per ton in 1921.

WATER PUMPED AT HEIDELBERG NO. 2, 1920 AND 1921

Month	Gallons of Water Pumped Per Ton of Coal Mined		Cost of Labor and Material for Pumping Water Per Ton of Coal Mined		Tons of Water Pumped Per Ton of Coal Mined	
	1920	1921	1920	1921	1920	1921
January	22,115	27,054	.072	.488	82	101
February	22,052	24,161	.083	.279	81.8	87
March	17,632	27,327	.469	.30	65	102
April	22,668	24,735	1.328	.406	83.9	92
May	30,719	27,656	2.199	.377	114	103
June	36,220	26,098	1.338	.257	141	96
July	44,058	37,921	1.63	2.61	163	140
August	32,556	41,710	1.126	1.026	123	155
September	40,133	31,251	2.993	.382	149	116
October	28,871	50,710	.486	.652	107	188
November	25,624	46,956	.215	.618	94	174
December	28,343	143,185	.288	1.44	105	532
Total average per month	27,118	33,388	.74	.59	100	123
1920						
Total gallons of water pumped	1,459,800,000		1,756,800,000			
Total cost of labor and material for pumping water:						
Labor	\$24,826.61		\$22,120.96			
Material	15,191.27		9,230.47			
Total	\$40,017.88		\$31,351.43			
Total tons of coal mined	53,838		52,625			
Cost of handling water, exclusive of power, per ton of coal mined			\$0.74		\$0.59	

Under What Conditions Are Steam Turbines Preferable To Electrical Units for Driving Auxiliaries?

Reliability More Important Than Economy—Turbines Save Conversion Costs—Independent Steam Units May Release Large Generator at Times of Idleness—Cheap Fuel Makes Heat Balance Less Imperative

WHETHER it is more advantageous to drive the auxiliary equipment of a power plant with steam turbines or electric motors is not a matter to be solved without due consideration of the special conditions at any given plant. Where the heat energy of the exhaust steam may be advantageously applied, as in the heating of feed water or in the warming of buildings, this circumstance strongly favors the turbine. With this machine, furthermore, no double transformation of energy is necessary.

In a mining plant, however, the primary consideration is not economy—reliability is far more important. Continuous and dependable performance of all equipment is an absolute requirement. After this reliability has been assured, economy becomes the next desideratum. The steam turbine has fully demonstrated its reliability, and when properly employed its economy is fair. In dependability of action it far outranks the reciprocating engine, and where conditions are propitious its choice in preference to the electric motor is fully justified.

Although the actual thermo-dynamic efficiency of the small turbine is almost invariably lower than that of the large turbo-generator unit, its direct application to the machine to be driven avoids all electrical generation, transmission, transformation and conversion losses. Any contrast made in the actual number of pounds of steam consumed by the small turbine and indirectly by the motor should take this fact into consideration.

Not infrequently the steam indirectly required to drive a small motor may far exceed the quantity re-

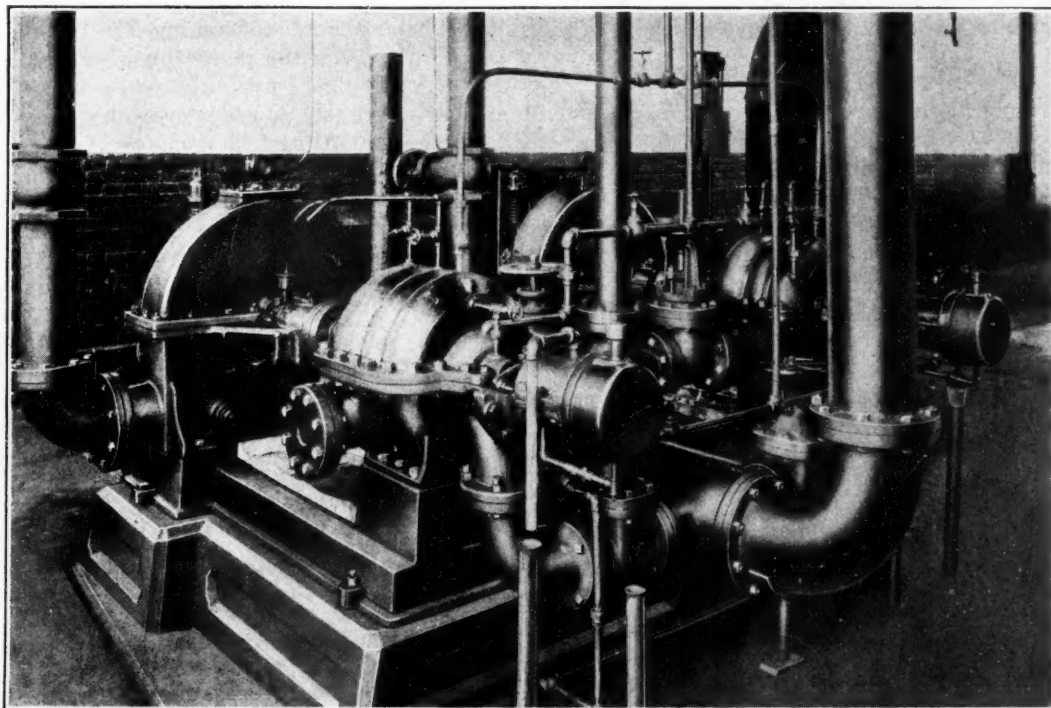
quired by a turbine of equal power. Thus on Sundays, holidays or during periods of shutdown a large generator may be run solely to drive the power-plant auxiliaries. If these are actuated by motors at least one generator must be operated. Under such a light load the efficiency of this machine will be low and consequently the quantity of steam actually required to drive, say, the boiler feed pump will be excessive. Under extreme circumstances the losses incurred by electric drive may exceed the consumption of the auxiliaries.

During such periods, therefore, the operation of a large generator for the sake of driving a few auxiliaries is uneconomical. If, however, these machines are actuated by turbines they may be driven entirely independent of any of the main units, which, of course, may be shut down entirely without in the least interfering with the operation of the boiler plant.

Simplicity is a highly important consideration when choosing a small turbine. The various small units scattered around the plant necessarily cannot receive the care and attention bestowed upon the main power units, consequently a single pressure-stage machine is preferred by many. In addition to this, such a unit should have a speed suited to the machine it is to drive. Of course several types of speed-reduction gears are on the market, but these necessarily lower the efficiency somewhat. In one make of turbine excessive speed is avoided by obtaining a multiple velocity effect in a single rigid wheel. This machine also has ample clearance of the buckets.

Boiler Feed Turbine Pumps

Two Terry steam turbines with 4-in. drums driving three-stage single-suction centrifugal pumps at 2,900 r.p.m., which have a capacity of 400 gal. per min. and develop a pressure equal to a 475 ft. lift. They supply water to 3,200 hp. Stirling boilers. Each turbine is a 90-hp. unit and both use steam at 175 lb. pressure, 200 lb. being the maximum. This installation is at the Underwood Colliery, Pennsylvania Coal Co., Throop, Pa.



One of the most important auxiliaries in the boiler plant is the boiler feed pump. Little need be said concerning the advantages of the centrifugal as compared to the reciprocating machine for this purpose. Smaller floor space for a given capacity, absence of water hammer in the feed piping, freedom from packing troubles, simplicity and consequent reliability in operation as well as maintained efficiency are among its cardinal virtues.

Necessarily the engineering economics of the ordinary central station differ radically from those of the mine power plant. At the former the fuel used costs more—sometimes much more—than at the latter, and as a result refinements in the matter of heat balance and economics that are entirely justified in the central station may be monuments of ignorance in the mine plant. In the mine plant the problem of heat conservation is, as a rule, far less delicate than in the large central station. Consequently non-condensing units may often be employed to advantage.

In the large plant where, say, boiler feed pumps both turbine and motor driven are installed, the turbine-actuated units may advantageously be held in reserve, the motors being employed for ordinary operation. Where many generating units are installed they may be cut off or put onto the line one at a time as the demand fluctuates, so that the load impressed upon each generator is at or near its rated capacity, and the machine consequently operates at or near its greatest efficiency. Inasmuch as the steam consumption of the large turbo-unit is comparatively small it is real economy to drive all auxiliaries by motor except those supplying exhaust steam for heating purposes.

The procedure just outlined as governing the driving of boiler-feed pumps is applicable also for draft fans and the like. As at present constructed draft fans are so simply and ruggedly built that they are not likely to fail in service. In many plants a double drive—turbine on one end and motor on the other—through suitable shaft couplings or clutches permits of driving the fan through either agency. This arrangement is regarded by many operators as being almost ideal, but others consider the motor superfluous and pin their faith to the turbine exclusively.

SOME PLACE SEPARATE BLOWER AT EACH BOILER

Some designers strongly recommend individual blowers for each boiler. Beyond doubt these possess the advantage that only one boiler is incapacitated when a blower fails. There is no escaping the logic of this reasoning. On the other hand, the advantage of this arrangement, considering the reliability of the single large draft fan and the fact that the combined power consumption of the several small machines far exceeds that of a single big one, is largely if not wholly counterbalanced. Furthermore automatic control of draft intensity in accordance with the steam pressure in the boilers is much more easily obtained with the single large fan than with a multitude of small ones. In the latter case regulation usually is accomplished by hand and consequently is seldom as close and accurate as may be attained automatically.

So far as economy of heat in a reasonably large plant is concerned, the extent to which steam-driven auxiliaries should be installed is governed by the extent to which the exhaust from them can be utilized either by heating or in an exhaust-steam unit such as a low-

pressure turbine. Beyond this point it will be more economical from the heat standpoint to use motor drive. In most up-to-date commercial plants both turbine and motor drives are employed.

In the mine power plant, however, heat economy may not be synonymous with financial economy. In other words, as fuel of a poor quality is being burned at the point of its origin, where it possesses its first and least value, heat may be so cheap that conserving it to the last British thermal unit may cost more than the value of the heat saved. Thus at such plants engineering economics might dictate the driving of the auxiliary or even the main units of the plant non-condensing, turning the exhaust into the atmosphere.

In any case economy in the mine power plant is not so overshadowing a consideration as it is in the vast majority of central stations, the reliability of the turbine as compared with the reciprocating engine giving it preference for installation in the isolated plant. Such plants, as a rule, should have a source of auxiliary power independent of the main units.

AUXILIARIES AT EUREKA ALL TURBINE DRIVEN

As an example of this kind of engineering the Eureka No. 35 plant of the Berwind-White Coal Mining Co., located at Windber, Pa., may be cited. This plant furnishes power for all this company's mines in its vicinity as well as to outside customers. Here the boiler-feed pumps, draft fans, stokers and other auxiliaries are turbine-driven. This is one of the largest and most modern coal-company central stations in the bituminous fields of Pennsylvania.

In the design of mine power plants many varying conditions may be encountered, each combination demanding a different treatment from the others. Thus, where such a plant is tied in with the power lines of a public utility, motor drive on most of the auxiliaries may be entirely justified. Again, where condensing water is available the exhaust from the auxiliaries together with that from a steam mine hoist may advantageously be passed through a low-pressure turbo-generator, a steam regenerator being interposed between the sources of exhaust-steam supply and the machine consuming it. Placing the ventilating fan within the power plant or an annex thereto, where the driving turbine may be under the supervision of the regular power-house force, the exhaust to be condensed or utilized in some manner similar to that just described, also offers interesting possibilities.

It is noteworthy that turbines are being extensively used in the newer mining plants. This is particularly noticeable in new operations in Kentucky and West Virginia. The equipment at these plants almost invariably includes turbine-driven auxiliaries, less frequent use also being made of motor drive. This practice demonstrates probably as nothing else could the present trend in favor of the small turbine, this trend being doubtless the result of the demonstrated reliability of this type of prime mover.

THE REPORT OF the investigation made by the Bureau of Mines at the Pittsburgh Station relating to the value of coke, anthracite and bituminous coal for the generation of steam in the low-pressure cast-iron boiler is being prepared for publication at a later date. The report shows the relative steaming values of the fuels and why the thermal efficiency varies with the different fuels. The draft required with the various fuels is carefully analyzed.

Scheme of Working Suited to Level Bed with Light Cover Has Longwall Work Flanked by Approach Roadways

Modified Longwall Appears to Be Method in Which Most Progress Is Being Made—In System Here Suggested Panels Are Worked Advancing with a Loading Machine and Pillars Are Removed Retreating

By M. L. O'NEALE
Morgantown, W. Va.

MUCH interest is being shown in attempts to improve present methods of attacking the coal in the bed. The chief objects sought are, briefly, as follows: (1) Quick development; (2) increased production from a given territory, or, in other words, concentration of working forces; (3) complete extraction of the coal; (4) utilization of machinery, equipment and labor to the utmost advantage; (5) safety of the working forces; (6) minimum cost of production, this factor being largely dependent upon and governed by the preceding considerations.

Ordinary room-and-pillar methods are satisfactory in accomplishing the first and the fifth of the above objects and may also, when properly handled, attain a fairly complete recovery of the coal bed. Longwall methods as practised in Europe, for various reasons which need not be enumerated here, rarely have been adopted in this country. The tendency in new methods here appears to be toward modified longwall or panel systems.

General utilization of cutting machines, mechanical haulage with long trips of cars, as well as increased efforts to solve the problem of mechanical loaders, all serve as incentives for seeking improved mining methods. Plant costs have risen, and labor itself, as far as capital invested is concerned, may be regarded in a similar light to equipment. Housing and provision for the needs of labor at a mining plant form items among the largest in plant cost, even though the rents received do not generally yield, by a considerable margin, a fair return on this investment. Consequently fewer men for a given production means less plant investment and decreased fixed charges.

METHOD PERMITTING EARLY COAL PRODUCTION

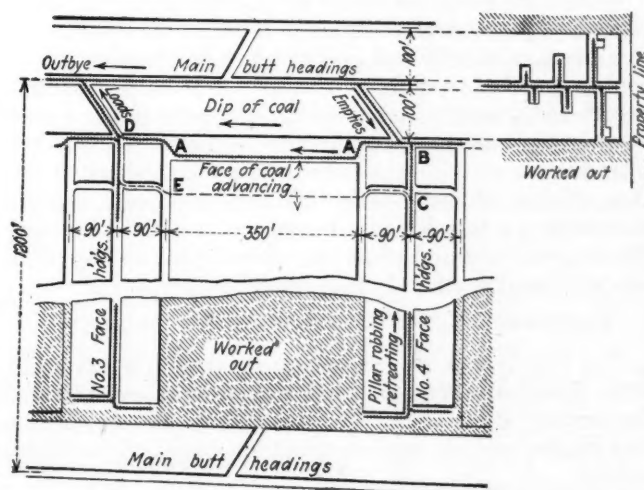
In an effort to solve the problems enumerated in the first paragraph of this article, the proposed system of mining shown in the accompanying illustration is submitted for the consideration and frank criticism of the readers of *Coal Age*.

Employment of this method, like that of all others, is limited to a certain range of physical conditions. It is here laid out for a fairly level bed with light cover, but could be modified, of course, to suit conditions differing radically from those just described.

The main haulage levels are driven on the butts and are shown 1,200 ft. apart. Two aircourses flank each butt heading. From the aircourse which as one enters is to the right hand of one set of butts the panel face is started and carried to the left aircourse on the next set of butts, and from the latter aircourse the face-heading pillars are started back on the retreat. It must be borne in mind, however, that the extraction of any set of face-heading pillars cannot be begun until the panels on either side have been worked out.

The upper section of the accompanying drawing shows the advance of the panel face in its early stages, and the lower depicts the start of the retreat in the face-heading pillars. The dip of the coal bed is indicated and the tracks are so laid out as to take advantage of natural grades. As soon as the main butt headings have been driven beyond the face headings shown and these face headings have been started, the panel face is slabbed from A to A and the coal loaded on the aircourse track. This track is shifted ahead as the face advances and heavy protecting timbers are set outside it at the corners (A-A) to confine the roof break to a line beyond the track. When the face has advanced so far that it is no longer feasible to protect the track in the position indicated, it is moved to a crosscut, as shown by dotted lines on the drawing. The track is shifted in this manner as necessity demands. The standard 80-ft. spacing of crosscuts should meet all ordinary needs of this track. Under some conditions of roof and cover it may be feasible to maintain this track along the face A-E much further than here shown, so that it need not be removed until the second or third crosscut is reached.

This system would lend itself admirably to a rapid placing of empties and removal of loads. The locomotive coming in with a trip of empties behind it runs into No. 4 face heading beyond B, and backs the empties down toward the working face, where they may be distributed by hand, if the bed dips. It then runs back around the main butt heading to No. 3 face heading, and picks up the loads, which have been dropped down and



SCHEME OF LONGWALL WORKING WITH SIDE EXITS

One of the difficulties in longwall is to provide a means of approach and exit to and from the face respectively. With longwall advancing this is contrived in such a manner that much is expended for packwalling and with longwall retreating it is also arranged but at much delay in development. This scheme avoids the difficulties of both plans by providing for side approaches, and the plan might work well under light cover.

bunched along the track approximately from *D* to *A*. Empties are shunted into the face headings as needed to advance these passages. As these headings need not be kept far ahead of the working face, their advance may be comparatively slow.

If shoveling machines of the type that travel on rails are used, two tracks must be maintained along the working face. If belt or other conveyors are employed along the working face, the track shown from *A* to *A* need not be laid, but instead a track may be placed along the face aircourse from *A* toward *E*. The conveyor then discharges into empties standing on this track.

If storage-battery or cable-reel locomotives are used for gathering, as is not infrequently the case, the electric cable for the cutting machines, the loading machines or conveyor motors is hung only to *A*, and later is carried along the face heading and through the haulage crosscut—for example, to *E*. The mining machine proceeds through No. 3 face heading to the working face, thence across it and out through No. 4 face heading.

When the panels on both sides of a pair of face-heading barrier pillars have been worked out, track is laid along the faces of these pillars at the inbye butt-

heading aircourse and the pillars are brought back retreating.

One pillar is kept slightly in advance of the other for convenience in laying the switch. The two tracks along the pillar faces make it convenient for grouping the loads and placing the empties for both places on the same motor trip.

As to ventilation, air traveling the main butt haulage as an intake should ordinarily find its way back through the worked-out panels on the return, but if the butt headings to the property line or other limit are excessively long and there is danger of choking the return, four or more butt headings, instead of three, as shown, should be driven. The number of these passages should be increased also if two haulage tracks are to be maintained, this depending, of course, upon output.

When the butt headings have reached their limit and the coal on either side has been extracted, leaving only the entry pillars along the butts, these may be attacked by splitting with narrow rooms, beginning at the inbye end. As much of these pillars as possible may thus be removed by one of the usual methods of room-and-pillar mining in retreat. The details of this work would be governed, of course, by local conditions.

Milwaukee Plant Exhibits a Drift Toward Use of Coal Dust in Power Plants

Coal operators are noting with interest the tendency toward the use of finer and finer coal and are wondering if the practice will advance so far that the mining officials ultimately will be interested more in getting fine coal than in procuring lump. Should this come about it will revolutionize the whole operation from face to tipple.

As a result of this development the methods of shooting and even of mining might change. The importance of tight mine cars would be emphasized and there would be a distinct disadvantage in topping them, for fine coal would be blown away, making a dangerous dust in the mine, and one of the big arguments for topping, that it encourages the making of coal large enough for that very purpose, would be refuted by changing conditions. The cleaning problems would all be affected by the same change in purpose, and a type of railroad car filled under air pressure might replace the present gondola. It is well to watch this development and if it be a profitable one to the industry to encourage it, for it might prove as valuable a development to the coal mine as was the introduction of the mechanical stoker, furnishing as did that change of combustion methods a market for an otherwise waste product. Already mines in the State of Washington are preparing pulverized coal and in Vancouver Island a plant is being built to prepare it.

FORESHADOWS NEW MARKET AND NEW METHODS

For this reason the following information extracted from *Power*, of April 18, 1922, should be of considerable interest to our readers. It foreshadows not only a new market for coal but new methods for use at our own coal mines.

Laid out for the ultimate generation of 200,000 kw. of electrical energy, 40,000 of which are already installed, the Lakeside plant of the Milwaukee Electric Railway & Light Co. enjoys the distinction of being the first large central station built in this country burning pulverized coal exclusively. The necessity for this plant

became obvious in 1915, and the site that it occupies was purchased the following year, but, because of circumstances imposed by the war, work was not begun until late in 1920.

The main building of this plant contains a boiler room, turbine room and switch house arranged in the order named. The coal-pulverizing plant is located in a separate building about 50 ft. in the rear of the boiler room. Between these two stand two concrete chimneys, each of which serves four boilers. On the side of the main building opposite the turbine room is a connecting structure, in which will be located the operating engineer's offices, a blacksmith shop, a pipe shop and a machine shop. The remaining building of the group is the car-dumping and crusher plant, which is on the shore of the lake about 400 ft. away from the pulverizing plant. This structure is built against the lake bluff, so as to take advantage of the slope and obtain a gravity flow for the coal.

Eight water-tube boilers have been installed. Each of these has 13,060 sq.ft. of heating surface, is designed for 300 lb. of working pressure and is operated at 265-lb. gage. They are arranged four on either side of a central firing aisle. They operate normally at 250 per cent of rating, and three boilers are sufficient to furnish steam for one 20,000-kw. turbine, leaving two spare boilers to allow for cleaning and maintenance. Each boiler has a superheating capacity sufficient to raise the temperature of 90,100 lb. of steam per hour from 411 to 611 deg. F., thus obtaining 200 deg. F. of superheat.

The belt conveyor transporting the coal to the pulverizing building is 36 in. wide and 385 ft. long, in this distance rising 91 ft. It discharges into a reversible cross belt conveyor of a similar width that distributes the crushed coal to three parallel conveyors equipped with automatic trippers which pass over the green-coal storage bin in this building and maintain an even supply in the various hoppers. Seven bins of this kind have a combined capacity of 3,400 tons, which is slightly more than 3½ days' supply for maximum operation of all the boilers in the present section of the plant. Beneath these bins run three 12-in. screw conveyors arranged to

discharge through automatic scales into three indirectly fired rotary driers 5 ft. 6 in. in diameter and 40 ft. long. These driers reduce the moisture in the coal by means of hot gases from individual furnaces fired with pulverized fuel.

With the foregoing arrangement it is possible to draw coal from any point in the bunker and deliver it to either of the three driers. Furthermore, the coal is weighed just before reaching the driers, which is much preferable to measuring it as it enters the coal bunker, inasmuch as this arrangement permits of a close daily check being kept on the coal consumed in the plant. Each drier is capable of reducing the moisture content in 10 tons of coal per hour from 10 to 2 per cent.

After being discharged from the drier the gas is blown through collectors 14 ft. in diameter. These recover any coal dust carried away by the gases in passing through the agitated coal. Hot dried coal is next transported to the mill-feed bin by means of parallel 16-in. screw conveyors and continuous bucket elevators. Each set has a capacity of 60 tons per hour. This provides for excess capacity in case a breakdown occurs.

Eight mill-feed bins are installed, each holding 25 tons and being placed over its respective mill. Four pulverizing ball mills utilizing air separation and driven by 100-hp. motors have a total capacity of 48 tons per hour. These machines pulverize to such fineness that 75 per cent of their product will pass through a 200-mesh screen and 90 per cent through a 100-mesh screen. With air separation, of course, no screens are needed. The dust formed by these mills is passed through a collector which separates the coal, and the air is taken back to the mill to be drawn through again, thus passing it through a continuous circuit.

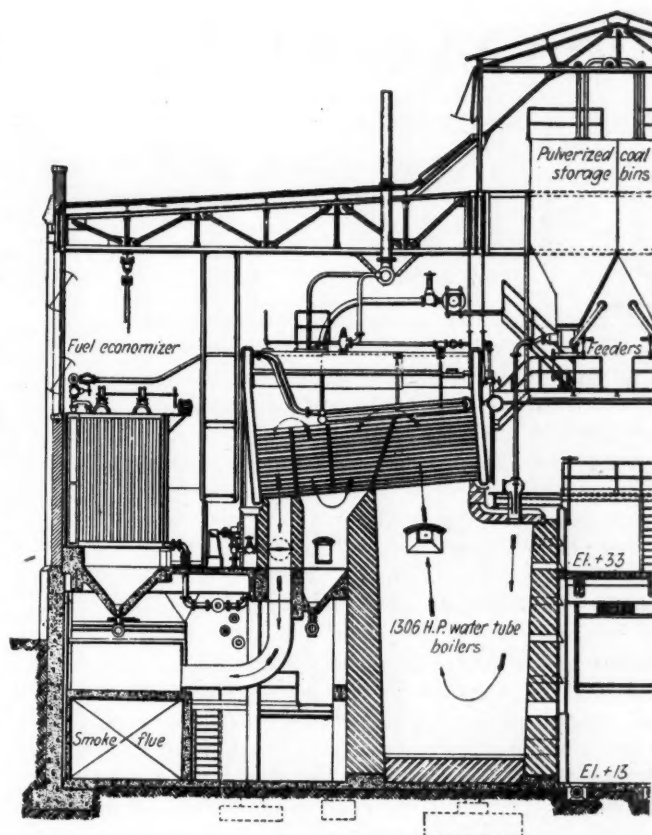
From the collector the pulverized coal is conveyed to a 50-ton storage bin supplying a pneumatic conveying system which transports it to four sets of bins over the firing aisle in the boiler room. One set will hold 150 tons. Coal is fed to each boiler through three duplex vertical burners by means of screw feeders from the overhead storage bin.

BURN 0.85 TO 1.62 LB. PER CU.FT. OF SPACE

Although some horizontal burners were at first installed for experimental purposes, these have now been replaced by burners of the vertical type, and all boilers are fed with fuel from the top of the furnace, the coal moving vertically downward. The furnace volume of each boiler is approximately 7,000 cu.ft. and in certain tests in which capacities ranged from 137 to 236 per cent of boiler rating the fuel burned per cubic foot of combustion space varied from 0.85 to 1.62 lb.

Each boiler is served by an individual economizer having 7,603 sq.ft. of heating surface. This is arranged with a bypass connection to the stack. Each economizer also is equipped with a turbine-driven induced-draft fan. The feed water enters these economizers at approximately 140 deg. F. and leaves them at 225 deg. F.

A system of steam-jet ash conveyors is installed with main runs extending to the furnace ashpit and branches leading to the combustion chambers at the rear of the boiler, also soot conveyor branches under the economizers. Ashes are removed by hand through clean-out doors in the boiler-room basement and fed into the conveyor pipe line. This conveyor discharges into an ash bunker, which delivers the ashes to cars on the railroad track at the east end of the boiler room. In the turbine



HALF VERTICAL CROSS SECTION, LAKESIDE PLANT

A plant which typifies a change in combustion methods in the Middle West. It burns pulverized coal exclusively, crushing its own coal at the plant. It is still a question whether this is the safest, cheapest and best place for pulverizing coal.

room the main generating units consist of two 20,000-kw. turbo-generators. These machines operate at 1,800 r.p.m. and deliver three-phase 60-cycle current at 13,200 volts. Steam is taken at 250-lb. pressure and 200 deg. superheat and is discharged at 1 in. absolute back pressure.

The accompanying boiler tests were conducted by the U. S. Bureau of Mines for the Combustion Engineering Corporation and all were personally supervised by Henry Kreisinger, the well-known combustion expert. The high efficiency obtained probably results from the fact that with powdered coal the proper ratio of air to fuel can be easily maintained. Thus small losses are incurred due to excess air and practically no losses are entailed by incomplete combustion or combustible remaining in the refuse.

SUMMARY OF BOILER TESTS WITH PULVERIZED COAL AT LAKESIDE POWER PLANT, BOILER NO. 8

Test No.	Duration Hours	Rating per Cent	Eff. of Boiler and Super-Heater	Eff. of Boiler Super-heater and Econ-omizer	CO ₂ in Gases Leaving Boiler	Temp. of Gases Leaving Boiler	Temp. of Gases Leaving Econ-omizer	Kind of Coal
1	42.3	137	83.3	86.3	15.8	434	168	Dried Illinois Coal
2	24.0	215	82.6	87.1	14.6	475	196	"
3	20.0	209	82.5	87.0	14.7	482	205	"
4	24.7	146	85.4	89.1	16.0	430	204	"
5	24.2	236	79.8	84.6	14.1	496	251	"
6	28.2	139	83.8	88.0	15.1	454	229	Undried Pennsylvania & Ohio Coal
7	25.6	177	83.7	88.0	14.7	466	242	"
8	24.0	175	85.2	89.6	15.1	463	239	"
9	24.3	204	83.9	88.3	15.1	487	256	"
10	24.6	203	83.0	87.0	14.7	474	256	"
11	24.1	244	80.2	85.0	14.0	530	286	"
12	23.9	241	81.7	86.4	14.2	524	263	"
13	24.2	251	81.0	85.6	14.2	531	272	"
14	24.5	130	84.7	88.5	17.1	435	218	"
15	17.6	137	84.4	88.4	16.4	440	221	"

Means Adopted to Remove Keyed Pulleys from Shafts

Description of the Various Keys Used for Securing Pulleys—
Causes of Sticking of Pulleys and Keys—What to Do When This
Difficulty Occurs—Precautions Taken to Protect Equipment

BY G. H. RADEBAUGH
Urbana, Ill.

KEYS and key fastenings of many designs are used on mine machinery. In most cases the design determines by what mechanical operation the pulley should be removed from the shaft.

One of the most frequent reasons why pulleys stick on a key or shaft is the twisting or rotation of the pulley on the key and the tearing of the shaft by the setscrews in the pulley hub. This causes a burr or uneven place on the shaft, which makes the removal of the pulley or collar difficult. In fact if the pulley is "solid"—that is, not split—it may be necessary actually to drive the pulley from the shaft with a heavy hammer or to pull it off with draw clamps. This will shear off the abraded metal on the shaft. Now and then highly raised burrs or irregular places will not shear or work down as just described when the pulley is being driven over them. In this case the hole in the pulley will be somewhat torn during the withdrawal. If this occurs, the hole must be trued up with a half-round file before the wheel is replaced.

RUST OFTEN HOLDS KEY AND PULLEY TO SHAFT

Rusting of shaft, pulley and key in many cases causes them to stick tightly together. This increases the difficulty of removing the pulley. This can be overcome, however, with a little extra effort.

Before considering the actual operation of pulley removal, as shown in the accompanying illustrations, it will doubtless be of interest to review some of the standard methods of fastening used by manufacturers of mine machinery.

The saddle key, as shown in Fig. 1, is used only when little holding power is required and the cutting or marring of the shaft should be avoided. This key is hollowed out to fit the shaft and holds by friction only. Keys of this design never give any trouble when the pulley is removed from the shaft. They are used on some of the smallest of power-driven machinery.

The flat key, Fig. 2, rests upon a flat seat formed on the shaft to receive it and therefore has a greater holding power than the fastening just described. In repairing much of the small power equipment about a mine this type of key can be used because with it a keyway is not necessary. A flat is merely filed on the shaft as shown in the figure.

SUNK KEY USED WHERE FIRMER HOLD NEEDED

The sunk key, Fig. 3, is most commonly used where the forces to be resisted are large. A channel called a keyway is cut lengthwise in the shaft, and another corresponding with it is cut in the piece to be secured; the key is then fitted to the opening formed by the two keyways. Cutting keyways is normally a machine-shop job, but it may sometimes be done by using a cape chisel and a flat chisel. This is, however, a difficult and trying operation, and is not recommended.

This type of key may be either tapered or straight.

To facilitate its removal the taper key sometimes is provided with a head as shown in the figure. This is done when the key cannot be driven out by blows on the point, that part of the key being where it cannot conveniently be reached. This type of fastening is known to the trade as a gib-headed key. The amount of taper given such keys usually is about $\frac{1}{8}$ in. per foot of length.

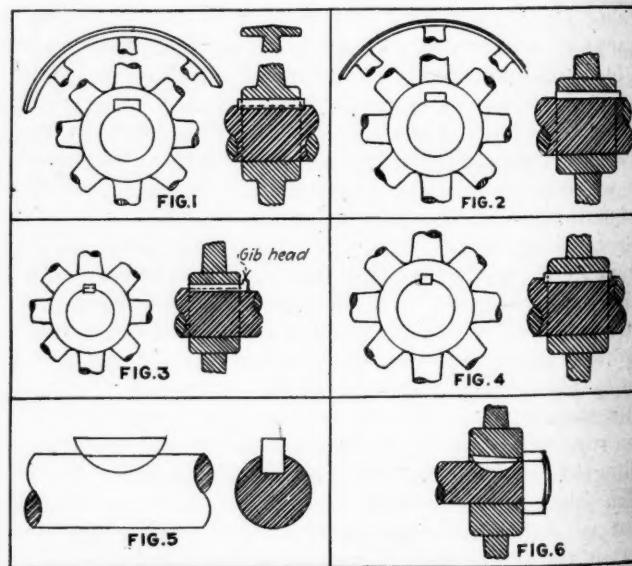
The square key is shown in Fig. 4. It should fit accurately on the sides to prevent it from rolling over in the keyseat, and it should be so constructed as to bear lightly on the top and bottom. These keys are made from square stock of soft steel and it is not necessary to do much filing or fitting if the keyways have been cut properly in the pulley and on the shaft. This type of fastening will be found on some of the larger mine machinery.

The Woodruff key, as shown in Fig. 5, is a comparatively new type of fastening and finds its chief use on tractor engines and equipment auxiliary thereto. It is used extensively also in automobile construction.

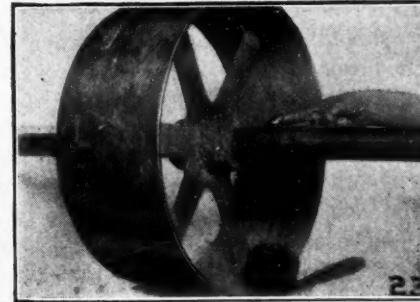
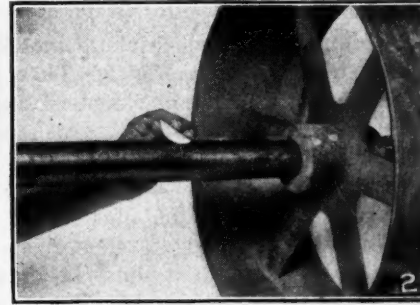
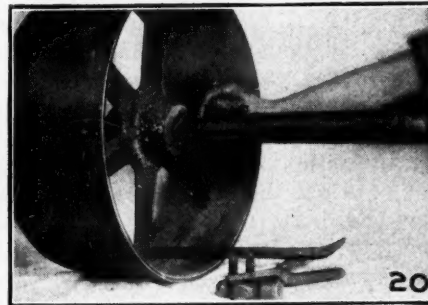
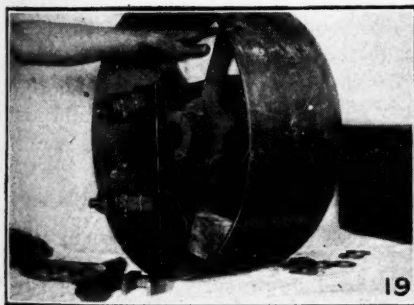
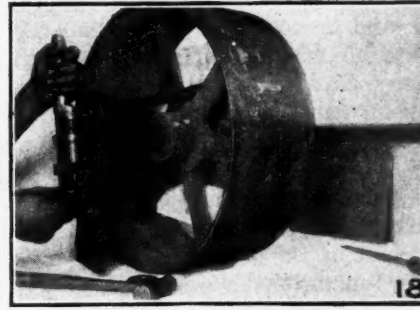
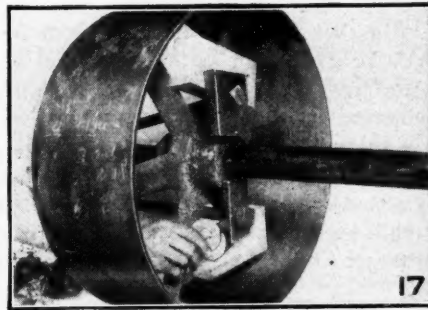
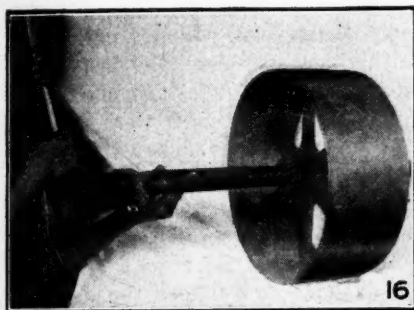
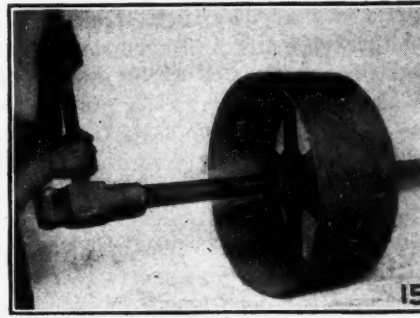
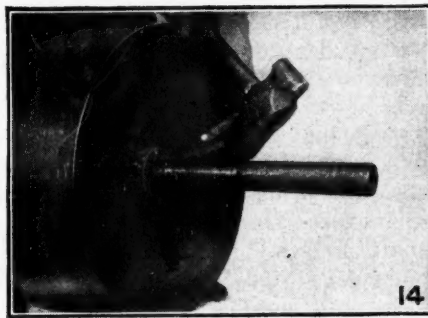
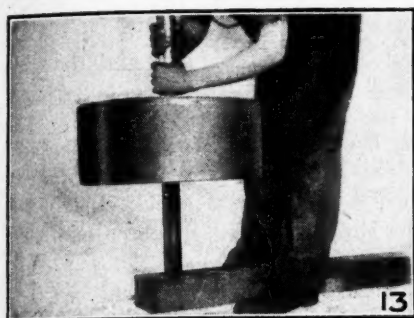
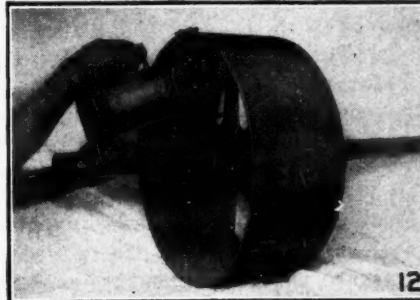
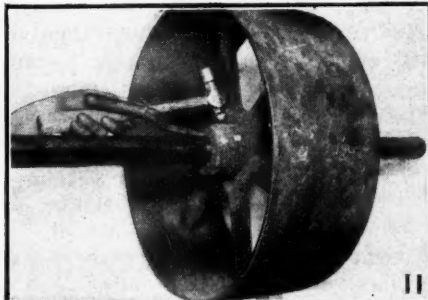
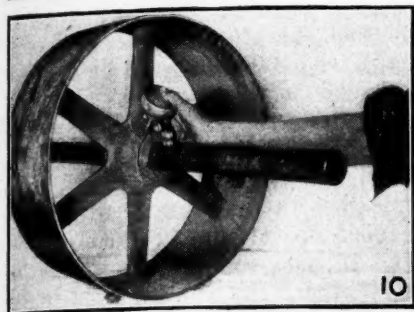
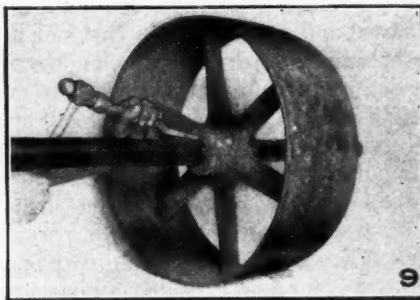
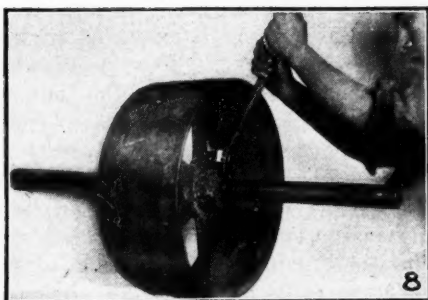
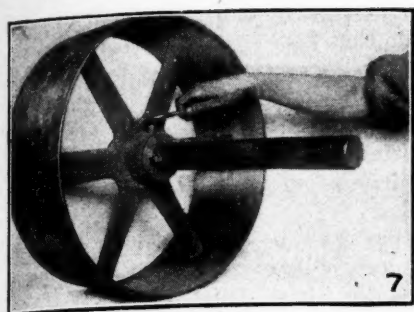
This key is made in the form of a disk segment which is placed in a circular-bottomed keyseat sunk in the shaft by a special milling cutter. As the key fits the seat it readily adjusts itself to any variation in the angle of the keyway in the wheel or pulley, as shown in Fig. 6.

The width of the key should be about one-quarter the diameter of the shaft. The depth of the slot cut in the shaft should be one-half the thickness of the key, and the depth of the seat in the pulley should be a little less than half the key thickness. This will permit the fitting of a square-stock key to the key slot.

Before removing a pulley from a shaft, examine the



FIGS. 1 TO 6. FIVE KINDS OF PULLEY KEYS
The saddle key in Fig. 1; the flat key in Fig. 2; the gib-head key in Fig. 3; the square key in Fig. 4; and the Woodruff key in Figs. 5 and 6.



FIGS. 7 TO 23

Thirteen Methods of Removing Pulleys and Keys

Also views showing the dressing of shafts ready for the replacement of pulleys. Some of the methods are those normally used and others are suited for use where the removal of the pulley is accomplished with much difficulty.

shaft surface on which the pulley must slide during removal and notice if it is rusty or scarred. Care must be exercised in driving the pulley over a surface that is not clean and bright. As the wheel bore usually fits the shaft closely, it is good practice to draw-file or scrape a dirty shaft before endeavoring to remove the pulley. After the shaft is clean remove the setscrew, if any is present, as shown in Fig. 7.

Several types of setscrews are used in machine building. They are designated by the shape of their points or heads or of both. The dog-pointed setscrew is used to advantage in pulley fastening. When this type of screw is used the shaft is drilled to receive the dog point. This affords a holding power greater than can be obtained with some of the other types of setscrews because the part held cannot move without the point being pulled from the hole.

CUP-POINTED SETSCREW MOST GENERALLY USED

The cup-pointed setscrew is that most generally used. It is the type shown in use in Fig. 7. Generally two screws are used, and they are normally placed 90 deg. from the key. It also is common practice to place setscrews so that they tighten or bear on the key itself. The holding power of a cup-pointed setscrew depends on the tightness with which it is forced into or against the shaft. Such screws are always made hard—usually casehardened—and so have a tendency to cut into the soft shaft. This is one of the reasons why a wheel so fastened is hard to remove from a shaft after it has twisted or rotated. Any such movement causes the hardened setscrews to tear or score the shaft surface.

Any one of several methods may be employed for drawing a gib-head key from a pulley. The most common is to use the ordinary buggy, wrecking or pinch bar and remove the key as shown in Fig. 8. This operation may be facilitated by using one of the setscrews as a pry block. In the illustration notice the piece of paper between the head of the setscrew and the bar. This is used to prevent slippage. In pulling a key in this manner it is well to bump the bar with the palm of the hand; quick, sharp jars are needed to start the key. If the key loosens under this treatment the rest of the job is easy, but if it refuses to budge, other operations are necessary.

KEY DRIFTS READILY MADE BY BLACKSMITH

Occasionally in a machinist's tool kit may be found the key drift shown in Fig. 9. This tool, however, can be made readily in the blacksmith shop of the mine. It should be given the same temper as a cold chisel. If the key does not release its hold under the action of the bar just described, the next expedient is to use the key drift. Notice in the illustration how the drift is placed in the keyway. It should be remembered that if the key is tapered, it must be driven out from the small end. If a square key has been used, the key drift is the only tool that can be employed. Such a key cannot be drawn in the manner that is used where a gib head is provided. If the key cannot be released by direct driving the problem of its removal becomes more serious and other methods have to be tried.

Thus coal oil may be placed on the rusted surface. Use an oil can filled with kerosene, placing the spout in the setscrew hole as shown in Fig. 10 and using an abundance of the oil. This should loosen up the rusted surfaces if the oil spreads between the shaft and pulley. To cause the oil to penetrate the rust seams,

peen around the pulley hub with a light ball-peen hammer as shown in Fig. 11.

This peening or jarring action has a tendency to loosen the pulley on the shaft, permitting the free movement of the oil. Some mechanics perform this peening operation when the key is being drawn with the buggy bar or driven out with the key drift as previously explained.

Another scheme that may be used to advantage is the heating of the hub of the pulley with the blow torch as shown in Fig. 12. This method has its objectionable features, but no doubt in some cases it will turn the trick. This operation can best be performed in the workshop, where the heat can be applied quickly. The flame should be first directed onto the hub just over the keyway. As the heat is being applied the hub should be peened as shown in Fig. 11. The key may then be drawn and removed.

We will now assume that the key has been successfully removed. The next operation is to remove the pulley from the shaft. In many instances this may be done with ease, but in others the pulley seems to be frozen to the shaft, so that its removal presents another problem.

If the pulley is not free on the shaft, and the size of the pulley and shaft will permit it, the pulley and shaft are picked up and treated as shown in Fig. 13. The end of the shaft is allowed to drop on a block of wood, the sudden jar on the pulley in many instances causing it to loosen. A much heavier shock can be applied by this means than with the ordinary hammer.

PULLEY MAY BE RELEASED BY HEATING HUB

If this does not release the pulley, heating may be tried, as was shown for key drawing, the operation being merely repeated. Many jobs will not permit the bumping operation, either because the shaft is too long or has other equipment fastened to it. In such cases the pulley may be driven from the shaft with a sledge hammer and a piece of scrap steel as shown in Fig. 14. The steel bar should, however, be applied to the strongest portion of the hub. Judgment must be used to determine the weight of blow to be delivered by the sledge, as otherwise the hub may be cracked.

In this operation it is wise to support the shaft on boxes or saw horses, so that the pulley will not rest on the floor. Two men are required, one to hold the steel bar and the shaft and the other to wield the sledge. This operation may be reversed. The pulley hub may be backed by a heavy iron or piece of rail and the sledge blows delivered to the end of the shaft as shown in Figs. 15 and 16.

Notice the difference in these two views. It is surprising how often the layman will be found driving directly on the end of an unprotected shaft. The reason why I always use a lead hammer, piece of brass or wooden block on the end of a shaft to receive the blow is simply because I save considerable time thereby. In driving direct on the shaft it is burred over and upset so that it will not pass through the hole in the pulley. It can, of course, be filed down to size in case the end is enlarged, but this requires much time.

If the pulley is located near the end of the shaft it may be removed by using a draw clamp. This device can be made up out of strap steel, two bolts, a few large nuts, and blocks of wood.

As shown in Fig. 17 and 18, two small straps of steel bear against the hub and two blocks of wood.

Washers are used to even up the block support. The bolts as shown pass through these straps and must be long enough to reach to the end of the shaft, where they pass through a large steel strap or yoke, as shown in Fig. 18. The operator tightens up on the nuts which pull directly on the two small straps in the rear of the pulley. An even pull must be applied to each bolt, using a large wrench. If the pulley is not released under this treatment, peen its hub. It is sometimes necessary to draw the pulley entirely off the shaft by means of these clamps. To do this without the aid of specially threaded bolts, an abundance of washers, large nuts, etc., must be employed as shown in Fig. 19.

When the pulley has been removed from the place where it was tight on the shaft the reason for the difficulty is revealed. Notice the rough place on the shaft as shown in Fig. 20. This is the effect of a cup-pointed screw and a loosely fitted key. Before replacing the pulley or other parts the shaft should be

smoothed with a draw file and well rubbed down with abrasive cloth.

In refitting a Woodruff key it should be placed in the milled slot and driven to place. This key, as previously described, is freely used in gas-engine construction. In Fig. 21 two of these fasteners are shown intended to hold one pulley.

Generally these keys are used on short bearings. When fitting them as well as when performing the same operation on a square key the height is obtained by draw-filing as shown in Fig. 22. To check this operation and to make sure that no more of the key will be removed than is necessary, lampblack is used as shown in Fig. 23. In order to fit properly a key must not have too much clearance on the top. By using lampblack, proof marks or spots are produced on the top of the key which indicate high places upon it. These high spots are then filed off and the key driven to place.

What Are the Actual Profits Earned by the Bituminous Coal Industry?

DURING the last four years—admittedly the best in its history—the bituminous coal industry operated on an average margin of about 9 per cent on an investment shown by the U. S. Census Bureau's report for 1921 to be approximately \$2,000,000,000. This was developed in a statement made by J. D. A. Morrow, vice-president of the National Coal Association, at the hearings of the House Committee on Labor on Representative Bland's bill for a commission to inquire into labor conditions in the coal industry.

On the subject of operating costs and profits in the bituminous branch of the coal industry Mr. Morrow said in part:

"It is doubtful if there is any feature of the production of bituminous coal which has been so beclouded by wild mis-statements of fact as the profits made by the operating companies. It is not long since a former Secretary of the Treasury gave the people of this country the impression that the bituminous coal producers made 2,000 per cent on the capital invested in the year 1917.

"According to the U. S. Bureau of the Census, the total amount invested in the bituminous coal mines of the United States in 1919 was \$1,940,000,000. The investment in 1917 must have been but little less. To make 2,000 per cent profit on any such investment would have necessitated making a profit of over \$70 on every ton of the 552,000,000 tons of bituminous coal produced in the year 1917. The mere statement of that figure sufficiently shows the absurdity of any statement giving any such impression.

"How little possible ground there was for such a statement is evident in the light of the report of the U. S. Geological Survey showing that the average price obtained by the operators for their total output in 1917 was only \$2.26 per ton.

ALL COSTS WERE INCLUDED

"That was the amount received, and out of that amount all costs of production and sales had to be met before any profit could be figured.

"In his testimony before this committee, John L. Lewis, president of the United Mine Workers, asserted that profiteering and not wages had been the cause of high coal prices. He presented a mass of partial figures covering admittedly selected companies, and by then assuming that the whole industry enjoyed profits similar to those of these particularly fortunate selected companies, he advanced conclusions as to the profits of the producers as a whole which are exaggerated and grossly misleading.

"Mr. Lewis quotes the financial manuals with respect to the net annual profits of eleven bituminous coal companies for the year 1917 in comparison with prior years and derives his conclusion that the coal operators made more than

a billion dollars in profits from 1916 to 1919 inclusive upon the showing of eleven companies out of 5,000. Any conclusion deduced from such partial information in face of the fact that relatively complete figures from official sources were available to Mr. Lewis, simply indicates a desire on his part rather to make a case than to give the facts fairly and fully to the committee and the public.

"I have prepared for submission to the committee a brief tabulation showing the average price received per net ton, the average cost per ton and the margin per ton for the years 1918, 1919, 1920 and 1921:

	Number of Operating Companies	Production (Net Tons)	Average Price Per Net Ton	Average Cost Per Net Ton	Margin Per Net Ton (a)
1918 (b).....	2,483	496,960,342	\$2.61	\$2.15	\$0.46
1919 (c).....	548	128,140,333	2.56	2.38	.18
1920 (c).....	399	117,251,310	3.58	2.87	.71
1921 (c).....	654	133,398,508	3.04	2.94	.10

(a) Margin is not the same as profit. From the margin must be paid all federal income and excess profits taxes and interest on bonds and borrowed money.

(b) From reports of U. S. Fuel Administration.

(c) From reports collected from its members by the National Coal Association. Selling expense is included in cost.

MUST CONSIDER HAZARDOUS NATURE OF INDUSTRY

"If these four years are taken together, they show an average margin for the four years of 36½c. per ton. On the basis of approximately \$2,000,000,000 investment in the industry, as shown by the report of the United States Census Bureau for 1921, this would give an average margin of 9 per cent for the industry for the four years, before interest or Federal taxes were paid.

"In view of the hazardous character of investment in a coal mine, subject to strikes, railroad disabilities, mine fires, floods, explosions, squeezes and adverse geological conditions, a mere investment return of 5 or 6 per cent would be a wholly inadequate compensation for the risk entailed. A much larger percentage of return would be fully justified as a means of enabling the industry to obtain the capital necessary to its sound development and to the proper safeguarding of life and property in the mines.

"Abnormal market conditions incident to the war enabled coal-mine operators to enjoy larger profits than they enjoyed under previous circumstances, precisely as did corporations engaged in every other line of industry. It is equally true that these same abnormal conditions enabled the employees of the mines also to enjoy a higher scale of wages and greater earnings than they ever had before.

"We are now in the process of readjustment. The evidence before this committee conclusively shows that the profits of the coal producers have long since returned to that condition of subnormalcy which is generally recognized to be characteristic of this industry, but the wages of the miners in all union fields have yet to make the slightest move toward alignment with the readjustment which has taken place in industry generally throughout the United States."



Problems of Operating Men

Edited by
James T. Beard



Mine Ventilating Fans Operating Either Tandem or in Parallel

Relative Yield of Mine Ventilating Fans Operating in Parallel or Tandem—Volume of Air in Circulation Dependent on the Mine Resistance

ONE or two of the statements contained in a paper read before a joint session of the American Institute of Mining and Metallurgical Engineers and the National Safety Council and extracted in *Coal Age*, Mar. 16, p. 445, have arrested my attention. The *Coal Age* article is entitled "Better Ventilation as an Aid to Mining Efficiency."

Under the caption "Booster Fans Boost Only Construction Cost," page 447, it is explained that a fan exhausting from an upcast shaft is of little assistance to another fan installed and blowing air into the downcast shaft of the same mine.

This statement is, of course, quite indefinite; but, for the purpose of argument, I am going to assume a concrete example that is met with frequently in the coal fields, in the ventilation of mines. I will assume that a fan having a capacity of 150,000 cu.ft. per min., at a 2-in. water gage, is exhausting air from a mine in which the downcast shaft is about a mile distant. Now, the mine resistance, in this case, we will say is such that the 2-in. gage created by the action of the fan causes a circulation of only 100,000 cu.ft. per min. in the mine. This fact makes it evident at once that the fan is working below its normal capacity.

INSTALLING A DUPLICATE FAN

In order to improve the circulation, then, we will suppose that a duplicate fan is installed at the downcast shaft. If this second fan, operated as a blower, is run at the same speed as the fan first mentioned, I feel safe in advising that the circulation will be increased to 141,500 cu.ft. per min., and the total pressure on the mine will be equal to a 4-in. water gage, or the sum of the pressures due to the two fans.

It may be argued that when this increased volume of air is passing through each fan, neither of the fans will produce the rated 2-in. gage, the speed of each fan remaining constant. It must be borne in mind, however, that when the fan was handling 100,000 cu.ft. per min., it was operating below its rated capacity and the increase in volume will not, in my opinion, destroy the initial depression produced by the

blade tips or the peripheral velocity, which has remained constant.

It is true, as the article states, you cannot place both fans at the exhaust position of this mine and thereby increase the volume. In my opinion, the two fans so placed will not give any greater volume than one of the fans working alone. The two fans installed side by side over a single shaft are working in parallel, whether exhausting or blowing.

The article goes on to state that "The volume of air flowing through the mine can be doubled, however, by the application of twice the horsepower if the ventilating units are independent of each other, . . . each (fan) having its own intake and return." I cannot agree with this statement.

A CONCRETE EXAMPLE

Assume, for example, that a fan is installed over an upcast shaft having a sectional area of 200 sq.ft. and the downcast shaft at the same mine has an equal area. Let us further assume that the air is split at the bottom of the downcast and again united at the bottom of the upcast shaft, thus traversing the mine in two equal splits.

First, assume a single fan exhausting produces 200,000 cu.ft. of air per minute under a 2-in. water gage, the circulation through the mine being in two equal splits, as just stated.

Then, to complete the comparison, assume a partition is placed in each shaft and two duplicate fans are now installed, side by side, over each respective compartment of the upcast shaft. In this arrangement, each fan is provided with its own independent intake and return air-course.

Under this arrangement, certainly, no one will assume to say that the two fans will produce a total circulation of 400,000 cu.ft. per min., with double the horsepower employed. In my opinion, the two fans will produce the same circulation of air in the mine as was originally produced by the single fan.

In closing, let me say I am often asked to quote on a fan having a capacity of 150,000 cu.ft. of air per minute, at a 3-in. water gage; while at the same time I am told the mine is now passing 75,000 cu.ft., under the

same gage (3 in.). The fact of the matter is that to double the air in this mine, will require four times the gage, or $4 \times 3 = 12$ in., which, of course, is prohibitive in American mining practice. It is therefore necessary to change the plan of circulation in this mine so that the airways will permit 150,000 cu.ft. of air to pass under a 3-in. water gage, before a fan designed for that circulation will operate at its normal capacity.

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Speed in Locomotive Haulage

Speed of locomotive determined from characteristic curve—Maximum safe speed of a twenty-ton mine locomotive from 12 to 15 miles per hour.

REFERRING to the inquiry of a mining student, relating to the possible speed of mine locomotives, as published in *Coal Age*, Mar. 23, p. 494, kindly permit me to draw attention to one or two points, in the reply to this inquiry, that require some revision. The student asked four questions, the answers to which are given in numbered sections.

The information given in answer to the first question is substantially correct from the manufacturer's viewpoint. The statement made in reply to the second question, however, requires some modification. The question is, "What is the maximum speed of a locomotive on a level track?"

CONSULT THE CHARACTERISTIC CURVE

Assuming a speed rating of eight miles per hour, the reply to this question states, "The speed of the train will vary inversely as the load." Although the speed increases with a decreased load, it will not be found that this increase is in a direct proportion. The only way to determine definitely the speed of a given machine under varying conditions is to consult the characteristic curve of the motor with which it is equipped.

The third question asked, "Can a twenty-ton locomotive be operated at forty miles an hour?" The reply to this question estimates quite correctly that a twenty-ton locomotive would be able to haul an 800-ton train on a level track, at the rated speed, 8 miles per hour, taking the low track resistance of 10 lb. per ton, the estimated 800 tons including the weight of the locomotive.

But the reply then wrongly assumes that the speed ratio of hauling is equal

to the inverse ratio of the weight of the entire moving load, including the weight of the locomotive, and reaches the conclusion that it would be possible to increase the speed five times when hauling one-fifth of the load.

By consulting the characteristic curve of the motor driving a twenty-ton locomotive, it is found that the maximum speed at which it is safe to operate this locomotive is twenty miles per hour, which is known as the "balance speed" of the locomotive. However, it will be found that track conditions in the mine will not permit of a speed much in excess of twelve or fifteen miles per hour.

No doubt, the reply to this third question is intended to be purely theoretical, as it has often been stated in the columns of *Coal Age* that the usual speed in mining practice should not exceed eight or ten miles per hour.

GRAVITY ACTS TO ACCELERATE SPEED

Finally, in answer to the fourth question as to the speed developed when hauling on a down grade of 5 per cent, it is estimated that, with a track resistance of 20 lb. per ton, the force moving the train is then that due to gravity, less the track resistance; or $(0.05 \times 2,000) - 20 = 80$ lb. per ton, which is correct.

It is then assumed that "the velocity moving a given mass varies as the square root of the force applied," which I believe is not correct. Within practical speed limits, for mine conditions, the resistance of a trip of cars and the locomotive remain practically constant, making the required tractive effort the same at a speed of 10 miles per hour as at 5 miles per hour.

In this case, the effective moving force due to gravity, above the track resistance, being 80 lb. per ton, that is the accelerating force. In locomotive practice, it is usual to assume that a force of 100 lb. per ton produces an accelerating rate of 1 mile per hour, per second.

On this basis, a force of 80 lb. per ton would produce an acceleration of 0.8 mile per hour, per second. In 10 sec. the speed would be 8 miles per hour; in 20 sec., 16 miles per hour; in 30 sec., 24 miles per hour; etc. In that time it is likely that the train would be wrecked.

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Upraising a Shaft in England

*Driving an upraise dangerous work—
Experience required to insure safety—
Description of method employed.*

MY own experience in upraising a shaft between two seams, in a mine in England, was recalled by reading the inquiry in regard to the best method of sinking a shaft, which appeared in *Coal Age*, Feb. 2, p. 212. A brief account of this experience may be of interest to readers. It is as follows:

With five other men, I contracted to drive an upraise at Hutton, Henry

Colliery, County of Durham, England. The shaft was to connect the Harvey and Hutton seams, separated by 120 ft. of strata.

The said shaft was 6 x 12 ft., inside of the timbers. The strata were almost all hard blue shale, with a few layers of ironstone about an inch in thickness, which commonly occur in the blue-shale formation, in that part of the country. A little more than half-way up the upraise, we encountered about six feet of hard gray sandstone. Underlying the upper seam there was about 18 in. of fireclay.

The idea of driving an upraise may appear to the superintendent who made this inquiry, as being cheaper than to sink a shaft from the surface. Let me warn him, however, that upraising is dangerous work; and if he has had no experience in that line he had better not attempt the job. Judging from the account, he has at least 60 ft. of material that is not self-supporting. In an upraise there is very little space for a man to get out of the way and avoid being caught by a fall.

Again, when the time required to stow this material away in the mine is taken into account, and the necessity of employing experienced men for the work is considered, this method will be found more costly than sinking. In regard to keeping the shaft drained, as has already been suggested this can easily be accomplished by sinking a borehole in the center of the cut.

DANGER ON RETURN TO FACE OF AN UPRaise AFTER SHOOTING

Speaking of the danger of upraising, when the job at Hutton was finished I vowed never again to undertake the same kind of work, because of the danger it involved. On returning to the face, after firing a shot in an upraise, there is no alternative but to face the conditions whatever they may be.

When going back, on one occasion, I had climbed to within two or three lengths of cribbing, beneath the scaffold on which we worked. At this point, I noticed that a big rock had broken one of the planks, which then gave way letting the rock fall to the bottom. Had I been a little further down the shaft, the rock would have struck and killed me. As it was, I was under a portion of the scaffold that was not broken and escaped, as it were, by a miracle.

The plan we adopted in prosecuting the work is, briefly, as follows: When the excavation, started in the roof of the lower seam, had reached a height of 6 ft. a set of heavy wall plates was placed in position, being supported on four posts, at the bottom. This set was tightly wedged and another set placed about 3 ft. above the first, and rested on short posts between them. The second set was now tightly wedged and lagging boards put in all around the shaft.

This form of cribbing was continued by putting in sets, 3 ft. apart, all the way up the shaft, as the work advanced. The shaft was divided by a line

of heavy buntons, at the center, to which were nailed planks forming a solid partition. That side of the shaft was allowed to fill with the rubbish excavated above.

The other side of the shaft was again divided, by a partition, so as to provide an upcast and a downcast for ventilation. Over this portion of the shaft it was necessary to erect a scaffold to support the men while at work. On the other side, they stood on the loose material filling the shaft. When finished this shaft was cleaned out and used to lower the coal from the upper to the lower seam.

WILLIAM DICKINSON.

Lochgelly, W. Va.

Danger in Solid Shooting

Many varying conditions make solid shooting dangerous—Alabama disasters confined to machine mines no proof of safety in solid shooting—Pennsylvania statistics show low death rate.

HAVING read the differing opinions of various writers on the matter of solid shooting, some being in favor of and others opposed to the practice, I want to offer my word as belonging to the latter class. It is my belief that the practice is dangerous and cannot be made safe, as long as present conditions prevail in the mining of coal.

In support of this conclusion, let me say there are too many conditions and circumstances that must be taken into consideration in the blasting of coal, to permit the work being done safely, unless all shots are first properly mined or sidecut.

For instance, the various powders used in blasting are not of the same strength. Again, the nature and hardness of the coal is variable and slips and faults make it necessary to carefully study the situation, before firing a shot in a coal mine. The direction of the coal face, with respect to the cleats and joints of the coal, is another important factor.

These conditions with which the miner must contend are too numerous to permit of the work being carelessly done. Any man who cares for his own safety and that of others will, in my opinion, mine his coal properly before shooting.

CAREFUL SUPERVISION NEEDED TO MAKE SOLID SHOOTING SAFE

It was with some disappointment that I read the allusion of John Rose to the claim made by another writer that, of eight explosions occurring in Alabama and costing five or more lives, within a period of ten years, all took place in machine mines, while the solid-shooting mines in that state were exempt from such disasters.

Mr. Rose remarks, "This statement ought to be convincing proof that solid shooting, when properly supervised by state and mine officials, as in Alabama, is not as dangerous as many would make it appear," and adds, "What is true of Alabama, in this respect, will apply to other states."

The fact that the explosions occurred in machine mines, while solid-shooting mines were exempt, to my mind, is no proof that the shooting of coal off the solid is safe. It only proves that the work, in those mines, was well supervised by competent officials. Can we claim, however, the same careful supervision in all mines, and, if not, what can be expected as the result?

By way of comparison, allow me to refer to statistics in our own state of Pennsylvania. The year 1918 witnessed one of the largest productions of coal in the history of mining in this country. Statistics show that the State of Pennsylvania produced that year 177,217,294 tons of bituminous coal, and but three fatal accidents are reported. Two of these were killed by premature blasts, probably by using short fuses, while the third was the victim of a powder explosion. This coal was all mined by pick and machine. It is doubtful if Alabama can show a similar death rate; namely, one death to 59,072,431 tons of coal mined.

Now, if this great amount of coal can be mined without the danger of solid shooting, why cannot the same

be done in all coal-producing states? It may be true that solid-shooting mines can be operated at a lower cost per ton; but how about the accident average? It is well known that each death in a mine costs the company an average of \$5,000, which makes it a costly proposition to take any chance in the method of mining employed. Statistics show that from 1898 to 1911 there were 119 deaths due to explosives and blasting in the mines, making an average of nine deaths a year. From 1911 to 1918 there were 58 fatalities, due to the same causes, or an average of 7.25 a year. Assuming the same average of deaths as in other causes, I estimate that 26 of these deaths can be charged to the hazard of solid shooting.

In closing, allow me to say that Pennsylvania coal mines are as modern as any in the world. If solid shooting were safe practice, it would certainly be recognized and followed in this state. I am referring to the bituminous mines of the state, in many of which the conditions are as favorable for solid shooting as elsewhere. My firm conviction is that the practice is unsafe.

—, Pa.

MINE FOREMAN.

Inquiries Of General Interest

Timbering in the Pittsburgh Seam

Seam Overlaid With Twelve Inches of Drawslate and Two Feet of Mixed Coal and Slate—Timbers Supported in Hitches Cut in the Ribs Found Expensive—Cheaper Method Sought

WORKING the Pittsburgh seam, in Eastern Ohio, requires considerable timbering. The timber mostly used, in this section, is locust wood. Our specifications state that the timber must be round and not less than 6 in. in diameter, under the bark, at the small end.

The coal averages 5½ ft. in thickness and is immediately overlaid with a drawslate that we will say averages 12 in. in thickness. As the working face is advanced in each place, this drawslate is taken down and we are then face to face with our problem, which is to find some cheap and efficient method of supporting the stratum above.

Overlying the drawslate is a layer consisting of a mixture of coal and slate that, under ordinary conditions, forms the roof in the workings. The nature of this stratum is such as to need support, and it is often necessary to cut hitches in the ribs for the short posts that hold up the collarbeams over the roadway.

It has been our custom to cut these hitches with a miner's handpick. These holes are cut 8 in. wide and the same in depth. The posts supporting the collars being 3 ft. long, the holes are

cut 12 in. in the drawslate and 24 in. in the coal.

We have found this cutting expensive and it would seem that there must be some more economical method of performing this work or handling the situation. Perhaps there is some device operated by compressed air or electricity that can be employed in cutting out these holes and would be more economical than to use hand-picks for that purpose.

In the hope that some of the practical readers of *Coal Age*, in this or in other fields, will be able to suggest something of benefit, we are writing for what information and ideas may be offered. Would it be advisable to use steel I beams or H beams instead of locust?

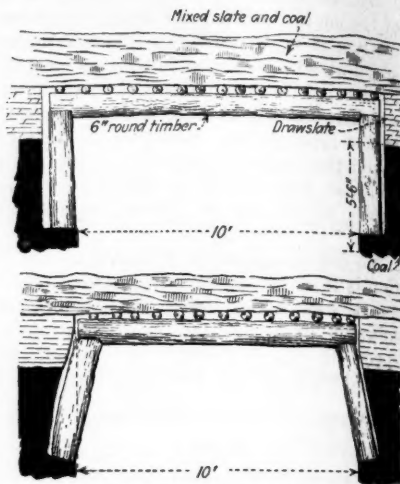
Bellair, Ohio.

MINE ENGINEER.

Some time ago, writers in *Coal Age* discussed conditions in the Pittsburgh seam, with reference to improving the means and methods employed in working that coal. Some of these conditions, it was claimed, were peculiar to the seam, in the Eastern Ohio coal field. At that time, many helpful suggestions were made and we hope

the same result will follow the inquiry here presented.

Judging from the sketch sent us by the correspondent, which is shown in the upper portion of the accompanying figure, it would appear that much of



RIGHT AND WRONG METHOD
OF TIMBERING

the expense of cutting the hitches in the ribs can be saved by shortening the collars and inclining the short posts slightly toward the center of the entry, as shown in the lower portion of the figure.

If this is done, not only will less cutting be required in the coal and scarcely any in the drawslate, but each timber set will possess greater strength and the notches for jointing the timbers be made more effective.

Mining in a Clay Parting

Seam worked by longwall-advancing method—Mining done in clay parting containing sulphur balls—Trouble begins when the gob heats.

KINDLY permit me to describe the situation in our mine, which is causing us much perplexity. For some time past, we have been giving the matter much thought, in hopes of devising some means of overcoming the difficulty. It may be that *Coal Age* or some of its experienced readers will be able to help us solve our problem.

The seam of coal we are working is divided by a 5-in. clay parting containing sulphur balls. The bottom coal is about 4 ft. thick and the top coal 1 ft. in thickness. The seam is moderately inclined and is being worked on the longwall-advancing system.

The mining is done by cutting out the fireclay parting, using for that purpose a radial machine. There is, unavoidably, an amount of slack and fine coal mixed with the clay cuttings, which are thrown back in the gob.

Owing to the presence of the sulphur balls in the fireclay, there has always been a tendency to the heating of this waste, but the situation has been gradually growing worse. We are anxious to learn if there is no method of counteracting this heating.

We realize, of course, that the surest way of eliminating the trouble is to load out all these cuttings, instead of throwing them back in the waste. It would seem, however, that there should be some method of saturation that would be possible or practicable and eliminate the heating of the gob.

MINING ENGINEER.

N. S.

As the correspondent has stated, the true way of eliminating this trouble is to avoid storing the cuttings in the mine. The presence of the sulphur balls (pyrite), in a mine gob, has always been known to cause heating. The heating results from the chemical action that takes place in the disintegration of the pyrite, which is more rapid in damp wet places.

The suggested saturation of the gob, if by water, could only be harmful and increase the trouble, as moisture always causes fine coal and slack to heat in the gob, even in the absence of

sulphur. Perhaps, salt would solve the problem. Notwithstanding the well known action of salt in absorbing moisture, it might be well to try the experiment of testing its effect to arrest the heating of a gob.

Readers of *Coal Age* will remember that the use of salt mixed with the stemming, in blasting, was recently discussed (Mar. 9, p. 413). According to all accounts, salt was found to be a very effective means of counteracting the danger of dust in mines.

It is possible that a similar use of salt, if this coal is blasted, might be found to have a favorable effect in reducing or preventing the heating of the gob. At any rate, the experiment, we believe, is worth trying.

It should be observed that the mixing of the salt with the stemming, in blasting, is very effective in giving a good distribution of the salt in the waste. No other means of distribution can prove like effective. The subject is open for discussion.

mitting the coal mined to be hoisted to the surface, or providing an airway for the ventilation of the mine.

Shafts are preferred to slopes when the coal lies at a considerable depth below the surface and does not outcrop at a convenient point on the property, particularly if the coal seam has little or no inclination. When opening an inclined seam that outcrops on the property a slope is generally preferred. A seam of moderate inclination that does not outcrop on the property is often best reached by a tunnel.

QUESTION—How would you begin the sinking of a shaft?

ANSWER—The first step is to determine the best location of the shaft with respect to haulage and drainage in the mine and having due regard also to the shipping facilities and buildings required on the surface. Having selected the site and staked out the position of the shaft, a templet of heavy timbers is constructed and laid in position on the ground, which is then excavated within these timbers. The latter are made long enough to extend several feet on either side and at either end of the excavation. The timbers must be well bedded in trenches cut in the floor. As the excavation proceeds, they furnish the support for the temporary headframe used for hoisting, and later form the foundation for the permanent tower and tippie.

QUESTION—If you were a mine foreman and had occasion to sink a slope what orders would you give the man in charge, regarding the timber to be placed therein?

ANSWER—All timber set must be inclined slightly up the pitch from a normal to the floor of the slope. The legs supporting the collars must be set in footholes cut in the floor if this is hard. Otherwise, they must rest against long cross-timbers, set in hitches cut in the rib on either side of the slope. All timber frames must be securely wedged and lagging must be used to support any loose top or sidewalls.

QUESTION—If you were sinking a double-track slope, on a dip of 40 deg., how would you secure the track?

ANSWER—On this inclination, the track would have a tendency to slip down the slope. In order to prevent this, long cross-timbers must be set at intervals of 10 or 12 ft. and supported in hitches cut in the rib on either side of the slope. At times, short struts can be used as braces, between the cross-ties on the track and the ribs on either side, these struts making an angle of about 45 deg. with the track.

QUESTION—Are there any good reasons why square timber is preferred in sinking slopes from surface? If so, give your reasons.

ANSWER—It is possible to form better joints when using square timbers and the completed slope presents a more uniform shape and makes it easier to install pipe lines and electrical conductors for power and signalling. Square timbers are well adapted when it is necessary to set the timberframes "skin to skin."

Examination Questions Answered

Examination Foremen and Assistant Foremen, Fifteenth Anthracite District

(Hazleton, April 11-14, 1922)

QUESTION—What gases are commonly met with in our coal mines? Name them and give the specific gravity of each gas.

ANSWER—The common mine gases are four in number; namely, methane or marsh gas (CH_4), specific gravity 0.559; carbon monoxide (CO), specific gravity 0.967; carbon dioxide (CO_2), specific gravity 1.529; hydrogen sulphide (H_2S), specific gravity 1.1912.

QUESTION—Do you consider it necessary to conduct an air current across the faces of abandoned chambers, on a steep pitch, in a gaseous mine? Give reasons.

ANSWER—The faces of abandoned chambers, on a steep pitch, in a gaseous mine, should always be thoroughly ventilated. This is necessary in order to keep the face clear of gas, which would otherwise accumulate in such places, gas being lighter than air. A strong air current will often be required to keep these places clear. This is the more important because of the liability of a fall of roof driving the gas down in quantity onto the gangway.

QUESTION—What provisions would you make in manways of chambers on steep pitches, to prevent workmen falling to the bottom if they should slip in ascending or descending?

ANSWER—Cross-logs should be set at intervals of 8 or 10 ft. all the way up the manway. These must be supported at one end in hitches cut in the rib,

the other end of the timber resting against a good prop set in a foothole in the floor of the seam. These cross-timbers should be set a few inches off the floor, in order to prevent the accumulation of loose material sliding down the pitch. Any accumulation of such loose material would destroy the purpose for which the timbers were put in place.

QUESTION—What instructions should be given to men in charge of timbering along the main haulage road?

ANSWER—The men should be cautioned in regard to exercising special care to avoid being caught by passing trips and instructed to arrange their work in a manner not to delay the haulage of coal. They should be instructed to examine closely the condition of all timbers on the road and remove such as show signs of weakness. Care will be required in removing timbers and replacing them with new sets, in order to avoid obstructing the road by a fall of loose material. All timbers must be set so as to give the full clearance between the timbers and passing cars to insure safety.

QUESTION—What are shafts; and when are they preferred to slopes or tunnels?

ANSWER—A shaft is a more or less vertical opening sunk through the strata overlying a coal seam, for the purpose of reaching the seam and per-

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

MAY, 1920, is the date usually associated with the beginning of the recent period of depression. It was in this month that the general level of prices began to decline. During the twelve months that followed, prices on the average dropped 50 per cent. It has required the better part of another twelve months for business to catch its breath after that memorable slide. That this has been accomplished and that business is rapidly adjusting itself to the lowered plane is further emphasized by figures received by the Department of Commerce during the first three weeks of May, 1922.

"Commercial and industrial movements in April, so far as reported," the department announces, "show, for the most part, a steady gain, although some reverses, such as in cotton consumption, are noted. The decline in coal production, due to the strike, has so far caused no interference with industry and very little uneasiness. New records were made in the April building operations and in the March gasoline production and stocks. Iron and steel production held its new level in April and the marked increase in the unfilled orders of the U. S. Steel Corporation indicate more active buying. Prices were steadier last month, with small increases in many commodities. Reports indicate that retail trade is improving.

"Consumption of raw cotton in mills decreased from 518,450 bales in March to 446,843 bales in April. The decline was largest in the northern mills, where the textile strike has curtailed operations; however consumption also declined in the Southern states. April consumption is still well above that of a year ago. Cotton exports totaled 612,654 bales, an increase of 150,000 bales over March.

"Production of pig iron and steel ingots remained practically stationary, with only slight increases over March, but at a very much higher level than at the beginning of this year. Unfilled orders of the U. S. Steel Corporation increased 603,000 tons over the end of March. This is the second month that steel orders have increased after a period of decline lasting nearly two years. Prices of iron and steel were much firmer in April, with increases in practically all lines.

"Gasoline production in March (figures for which are just available) amounted to 472,278,000 gallons, thus establishing another new high record. Consumption also increased over recent months but not in proportion to production. As a result, stocks again increased to a new record of 854,232,000 gallons.

"Building contracts awarded in the 27 Northeastern states amounted to \$353,161,900 in April, thus exceeding all previous records. The former high record was reached in July, 1919, when the total was \$317,698,000. The total amount of floor space in the nine classes of building for which this is recorded amounted to 58,146,000 sq.ft. in April, compared to 51,957,000 in March and 34,471,000 sq.ft. in April last year. Practically all building materials show increased production.

"Domestic movements of wheat and corn in April were on a lower plane than in either the preceding month or in April, 1921.

"The net operating income of Class 1 railroads showed a marked gain in March, with a total of \$83,511,000, compared to \$47,771,000 in February.

"Employment in industrial establishments continued to increase in April. The number of business failures declined slightly in April, but the total liabilities rose to over \$73,000,000."

Freight Car Loadings 2,537 Less

Loadings of revenue freight during the week ended May 6 totaled 755,749 cars, a reduction of 2,537 as compared with the previous week, according to the Car Service Division of the American Railway Association. This, however, was an increase of 34,027 cars over the corresponding week of 1921, and compares with 843,184 cars loaded for the same week of 1920. Coal loadings for the week totaled 75,410, which was 222 more than the preceding week, but was 69,464 under the same week of 1921 and 96,746 under the corresponding week of 1920.

Idle freight cars for the week ended May 8 totaled 521,746, as compared with 529,658 on April 30, or a decrease of 7,912. Surplus coal cars decreased 8,801 within the same period, the total surplus being 226,276 cars. The total number of coke cars was 5,350, a decrease of 37.

Retail Food Prices Up Slightly

There was an increase of one-tenth of one per cent in the retail cost of food to the average family in April as compared with March, according to the retail food index issued by the United States Department of Labor, through the Bureau of Labor Statistics.

Wholesale Prices Unchanged

Wholesale prices of most commodities in April varied little from those of the preceding month, according to information gathered by the United States Department of Labor, through the Bureau of Labor Statistics. The bureau's weighted index number, which includes 327 articles or price series, registered no change in April from the general price level of the month before.

Automobile Production Booming

Automobile factories in the Detroit district are now operating on a schedule which makes practically certain the creation of a new high production mark for passenger cars for May. The industry is now operating at a speed probably greater than any it has known before.

Reports received by the Department of Commerce showed an increase in production during April. New records were made for the output of both passenger cars and trucks, compared with the preceding ten months for which figures are available. With the reports lacking for only a few small companies, the total April production of passenger cars amounted to 196,512, or an increase of nearly 30 per cent over the March production of the identical firms. The April truck production totaled 21,944, compared with 19,449 from the same firms in March.

Present Strike an Anomaly in Labor Disputes in The Connellsville Coke Region

BY JOHN L. GANS

IF IT were not little short of an industrial tragedy, the present strike in the Connellsville coke region would be somewhat of an anomaly in labor disputes in the district. In practically all essential features it differs from all other strikes that have preceded it in the forty-three years' history of beehive coke making in western Pennsylvania.

In the so-called "big strikes" of 1885, 1887, 1891 and 1894 there was never any doubt, misapprehension or misunderstanding on the part either of employees or employers as to why there had been a cessation of work.

In the present strike there was no notice or warning of an intention to quit work, no demand for higher wages, no protest against a proposed reduction, no list of "grievances" presented with a strike threat as an alternative to a refusal to adjust complaints, real or fancied. Men who have gone on strike cannot give reasons for their action any more cogent than that given by a Slav coker who, in reply to a question as to why he was on strike, said: "We strike account prohibition. We have no good time any more. Give us beer and 'polinky,' we go to work again."

In the early strikes the leadership was entirely native, comprising men who had actually worked from day to day in the mines and coke yards and who had a close at hand familiarity with working and living conditions. Among them were men still living in the region who have since risen to stations far removed from their early activities.

From its very beginning the present strike has been engineered by non-resident leaders, some of whom never saw a coke oven until circumstances and orders from national headquarters of the United Mine Workers of America sent them to the region.

PROFESSIONAL ORGANIZERS LEAD PRESENT STRIKE

The leaders of the present strike are professional organizers, not fellow workers of the coke and mine workers of the Connellsville region. Having no more specific incentive to offer than to show sympathy with the men on strike against a reduction in wages in the unionized fields, the organizers have been more or less hard pressed to devise reasons why the coke workers should lay down their tools.

A strong play has been made to sever the uniformly cordial relations which have existed between the operators and their employees ever since the conclusion of the last strike, twenty-eight years ago. During the intervening time there has not been a labor disturbance except an occasional local difference, which has always been easily adjusted. The necessity has never existed for the workers to make a demand for higher wages, the H. C. Frick Coke Co., to which has been accorded leadership in such matters, having made voluntary advances whenever conditions warranted such action. From 1894, when the first Frick scale was posted, until the outbreak of the war in 1914, there had been thirteen scales which in the aggregate provided an advance of 85 per cent in wages. But two of these scales made slight reductions, which, however, were in each instance fully restored by the next succeeding scale.

Between 1914 and September, 1920, there were nine scales, each in succession giving an advance over the preceding, the nine advances aggregating 125 per cent over the pre-war scale. Since the September (1920) scale two reductions—May 16, 1921, and Aug. 1, 1921—totaling 25 per cent have been made, leaving the scale now in force 100 per cent higher than the 1914 scale and 185 per cent higher than the first scale of February, 1894. The present Frick scale, which has always provided the highest rates of wages for similar classes of labor of any beehive coking region in the world, has been accepted and paid by all the independent producers in the region for the past twenty-eight years.

The scale being entirely satisfactory to the workers and presenting no vulnerable point of attack, the visiting organ-

izers have sought to create dissatisfaction with the method of computing the miners' earnings as compared with the method used in the unionized districts. In the Connellsville region the custom has always been to pay on the basis of measurement, not weight. One hundred bushels of coal mined and loaded into mine wagons is the unit to which the mining rate applies. This system is characterized by the strike leaders as "mining coal by the acre instead of the ton." They have labored zealously to stir up strife on this score by alleging that the miner does not get paid for all the coal he mines because, by the organizers' reasoning, multiplying the known content of wagons (certified by the state mine inspectors) by the number loaded is less accurate than weighing the contents on tippie scales.

In the early days of coke making, before state regulation served as a check upon their cubical content, there were times when, due to the irregularity in size of wagons even in the same mine, the "hump" which miners were obliged to put on their wagons was an issue in some of the strikes. But that condition was righted by the generally accepted rule that wagons be "level full on the tippie." Any reference to this question at this time by the organizers displays their eagerness to foment strife and shows the dire need they have to draw upon ancient history in finding issues for a strike of the coke workers of today.

LEWIS WITHDRAWS OFFER OF STRIKE BENEFITS

During the early days of the present strike assurances were given by the organizers that if the workers joined the union they would receive strike benefits. When this came to the attention of international headquarters President Lewis of the United Mine Workers issued a statement declaring that no benefits would be paid. When the organizers in the coke region were obliged to correct the impression that had gone forth, considerable dissatisfaction developed among the strikers, which made it extremely difficult to obtain recruits for the union.

Finding in many sections of the region a lack of enthusiasm about striking the organizers began to set up the plea that had it not been for the wage increases and better working and living conditions the union had been able to obtain in other mining fields, the workers in the Connellsville region would still be "living in hovels" and "ground down like slaves by the arrogant bosses."

The comfortable homes, fitted with running water and electric lights, free garden plots, fuel delivered at nominal cost, playgrounds, swimming pools, community nurses, baseball, football and basketball teams, first-aid and athletic meets, bands, orchestras, night schools, amusement halls and other welfare and recreation features of the coke towns were, the organizers allege, due to the efforts of the union in other districts and not to any magnanimity or philanthropy on the part of the management of the employing corporations of the coke region. Gratitude for these things, the organizers urged, should be expressed by joining the union and staying out on strike until the struggle is won in the Central Competitive Field. Failing or refusing to do this, the organizers warned, would result in the workers of the Connellsville region being obliged to revert to the working conditions and wages prevailing thirty years ago.

The older employees who have been through some of the big strikes of the region have not been moved by these or similar appeals. They have benefited by the continued efforts of the operators to make life easier and better for the men who toil in the mines and coke yards. While some of the more radical have never accepted the view that these things were being done through a real desire to improve living conditions, the bulk of the men of mature age or long service have appreciated the service in their behalf.

The effect upon the young men of the region, who have

never participated in a strike, is quite different from the effect upon their fathers and grandfathers. Until the advent of the troop of organizers now in the region the young men were not accustomed to hear abuse heaped upon the operators. Influenced by intemperate remarks and extravagant statements many of the younger workers have conceived the notion that they have grievances which

they feel can be adjusted only through the medium of a strike. That being their attitude the strike agitation has been fostered almost wholly by men who were babes or youngsters at the time the region was last disturbed by a protracted struggle over the question of wages. The local leadership therefore has largely gravitated to the men of less mature judgment and experience.

Anthracite Operators Reply to Miners' Demands

ON MAY 18 the anthracite operators replied to the miners' nineteen demands, the response being addressed to John L. Lewis, president of the United Mine Workers of America; W. J. Brennan, president of District 1; Thomas Kennedy, president of District 7, and C. J. Golden, president of District 9. The reply was as follows:

"Relative to your nineteen demands, to which we have given careful consideration and on the acceptance of which you are still insisting, we herewith make reply:

"If granted, these demands, the majority of which are practically identical with those denied by the United States Anthracite Coal Commission in 1920, would impose an additional burden of at least \$170,000,000 annually on an industry already carrying labor costs above the war-time peak.

"It must be obvious to you, from what we have already presented in reply, that your demands cannot be granted without irreparable injury to the industry and its employees.

"To agree upon a wage scale out of line with wages generally being paid for similar service would be as unproductive of satisfactory results as has been the continuance of the high wage rates in the bituminous union fields, which utterly failed to produce adequate annual earnings for those employed therein.

"No agreement between us will accomplish the results we both seek except one which will provide reasonably steady working time at fair wages and the production of coal at a reasonable cost.

"In order to accomplish this result, it is our firm conviction that in the face of the decline in wages and prices which has been taking place for more than a year in other lines of industry, the anthracite industry can no longer continue to pay the present wages, which were established by the President's commission in 1920, at a time when the cost of living and the business activity of the country were at the peak.

"For the year 1921 the average annual earnings of all men coming within the terms of the 1920 agreement who worked in each pay period of that year exceeded \$1,800, a figure equalled in no other basic industry. According to the comprehensive survey recently made by the National Industrial Conference Board, anthracite wages show an average increase in actual weekly earnings of 152 per cent above the basic 1914 period, against an increase in the cost of living, as of March 15, 1922, of only 54.7 per cent. The average earnings of mine workers, as computed by us, has been practically confirmed not only by the National Industrial Conference Board but also by the United States Bureau of Labor Statistics.

"The President's commission in 1920 set wage rates in the anthracite field which, in conjunction with the steady employment offered by the industry, produced earnings largely in excess of the increased cost of living at that time. Since the award of the commission, due to the decline in commodity prices, the mine workers have further benefited by the increasing value of the dollar, while both wages and opportunity for employment have declined in other industries. The figures of the Industrial Conference Board show a reduction in the cost of living of 24.4 per cent since July, 1920, and the figures of the United States Bureau of Labor Statistics a reduction of 22.9 per cent during that period.

"It is evident that the present economic situation demands a substantial decrease in wages if a normal production of anthracite coal is to continue and reasonably steady employment is to be provided. Therefore, in lieu of the wage program submitted by you, the operators propose an agreement embodying the following terms:

(a) Contract rates shall be decreased 18 per cent below the rates established by the United States Anthracite Coal Commission in August, 1920.

(b) Day rates of men shall be reduced \$1.20 per day or per shift below the rates established by the United States Anthracite Coal Commission in August, 1920.

(c) Day rates of boys shall be reduced 72c. per day below the rates established by the United States Anthracite Coal Commission in August, 1920.

"This general wage structure represents an average decrease of approximately 21 per cent, and will therefore fully maintain the purchasing value of the wages as established by the Anthracite Coal Commission in 1920. It provides a minimum rate of 37½c. an hour for unskilled men employed outside the mines, with relatively higher rates for other occupations requiring skill and experience.

"With reference to the term of the agreement, the operators deplore the disturbance to business and the economic loss resulting from frequent controversies and suspensions. In order that this may be avoided, we propose a five-year contract, subject, however, to annual adjustments *as to wage rates only*, as follows:

"On Feb. 1 of each year a joint committee of anthracite mine workers and operators shall meet to adjust wages, to be effective April 1 following, taking into account the following factors as a basis of adjustment:

"(a) Changes in the purchasing value of the wage earner's dollar within each year as determined in the anthracite region and surrounding territory by recognized standard authorities.

"(b) Opportunity for employment offered by the industry.

"(c) Wages and earnings paid in other basic industries under similar living conditions for corresponding service.

"(d) The general economic situation.

"In case no agreement shall have been reached by March 1 in any year, the determination of proper wage rates shall be referred to a commission to be composed of five persons to be selected by the Presiding Judge of the United States Circuit Court of Appeals for the Third Judicial Circuit, the personnel of the commission to be as follows:

"(1) A mining engineer and geologist familiar with mining conditions and coal production but not in any way connected with coal mining properties, either anthracite or bituminous.

"(2) An economist of established reputation who has not been employed heretofore by either party.

"(3) A judge of the United States Court for the eastern district of Pennsylvania.

"(4) A man who has been affiliated with and is representative of the labor movement in the anthracite field.

"(5) A man who by active participation in the mining and selling of anthracite coal is familiar with the physical and commercial features of the business.

"The operators offer the foregoing with the firm conviction that the terms are fair to the employees and necessary to the industry. The periodical adjustment proposed provides for collective bargaining in the first instance, and resorts to arbitration only in case collective bargaining fails.

"The continuation of the Anthracite Board of Conciliation will provide a satisfactory method of settling any dispute that may arise within the period of the agreement.

"A form of contract embodying in detail the proposals contained herein is submitted herewith."

The proposal was signed by S. D. Warriner, W. J. Richards, W. L. Connell and W. W. Inglis, representing the anthracite operators.

Hoover Calls General Conference of Operators May 31 To Avert Runaway Coal Market

BY PAUL WOOTON

Washington Correspondent of *Coal Age*

TO MAKE effective a plan intended to prevent a runaway coal market a general coal-price conference has been called by the Secretary of Commerce to be held in Washington May 31. This announcement by Secretary Hoover followed a preliminary conference on May 18 at which fifty operators, representative of all the non-union fields, voted to use the Garfield schedule of prices of Oct. 29, 1917, as a basis for fixing fair prices for coal. At the same time announcement was made that buying for the larger consumers will be done through committees so as to unify these purchases and prevent the entrance of speculators. In announcing the general price conference Secretary Hoover said:

"The administration expects coal operators in the interim before this conference not to sell coal at prices in excess of the Garfield prices, with such adjustments as are necessary to meet such changed conditions as to costs and other factors as will be fair to the public and to the operators. Furthermore, charges by wholesalers or retailers of larger commissions than were allowed under the Garfield scale, or the resale of coal for speculative purposes, is not fair to the public and the government would like to hear from consumers who have been subjected to higher prices than this basis warrants.

"The vast majority of coal operators and wholesalers everywhere are expressing approval of the action of the administration to curb speculative rises in the price of coal and are co-operating finely with the government to maintain this situation. The action of the producing operators and of the wholesalers in this particular deserves the gratitude of the public, more especially as a large part of the coal produced for many months prior to the strike was produced without profit and even at a loss. The great majority of operating mines wish to demonstrate their sense of responsibility to public interests in this matter.

TO DEVISE MEANS OF CO-OPERATION WITH GOVERNMENT

"The object of the meeting on May 31 is to devise a means whereby this spirit of co-operation with the government and the public can be organized and made effective."

In opening the public meeting with the operators on May 18, Mr. Hoover explained that the only way to prevent profiteering and pyramiding of prices is to take action before the situation gets out of hand. In an identical situation in 1920, he said, coal sold from \$9 to \$15 at the mines. When an effort was made to straighten out the situation it was very difficult to handle and while prices were forced down from unjustified levels, the reduction did not squeeze out all of the unjustifiable margin. He frankly explained to the operators that there is no authority to enforce any proposal and that any action taken would have to be voluntary. He did express the opinion, however, that a little self-denial on the part of the operators at this time would result in a great service to the public and redound to the best interests of the operators. He went into some detail to show how distribution could be better regulated and how the unnecessary bidding up of prices could be prevented.

In suggesting the Garfield scale adopted late in 1917 and early in 1918 Mr. Hoover explained that this seemed to be the best basis on which a calculation of a fair price could be figured. He noted that the Garfield prices were based on a 1917 wage scale and that some of the non-union districts are now paying a wage scale in excess of that in effect in 1917. He also pointed out that the Garfield prices range from 15 to 30 per cent above the pre-strike level of prices, but that they constitute as fair a base as could be had readily.

When Mr. Hoover completed his introductory remarks, he called on J. G. Bradley, president of the National Coal Association. Mr. Bradley congratulated Secretary Hoover

on taking up the matter before any flurry in prices has occurred. He pointed out, however, that prices must increase somewhat to bring out the maximum production from the fields now in operation and to enable them to throw off the yoke of union domination. He blamed the buyers' panic of 1920 on the irresponsible jobber and the frightened consumer. The public, he said, seemed to lose sight of those really responsible and laid the blame at the door of the operators. Mr. Bradley expressed full sympathy with the plan which Mr. Hoover outlined.

C. E. Bockus was called on next. He stated that the spot price on that day was less than the cost of production in many fields. He said there is no scarcity of bituminous fuel.

C. F. Richardson, president of the West Kentucky Coal Co., attacked the methods of the brokers in bidding up the price. He said the railroads are contributing to the present disturbance in equitable distribution by buying coal to prevent the distribution of the coal which they have stored. He expressed the opinion that the railroads are conserving their stocks to the greatest extent possible so as to be able to use all their coal cars for revenue business when the strike is over and business opens up. He said the operators in western Kentucky had made some money during the war but that all of it had been returned to the public during the past year. He expressed the opinion that there is no chance to prevent pyramiding of prices unless the middleman can be eliminated entirely in times of emergency. He expressed the opinion that the coal should go direct to the consumer. He made the point that no one assails the consumers for robbing the operators when they are forced to sell their coal below cost.

COLONEL WENTZ THINKS WELL OF SUGGESTION

Colonel D. B. Wentz pointed out that in the last thirty days the prices in Virginia have been less than the Garfield prices, but that he regards the suggestion of Secretary Hoover as an excellent one which can be made to operate successfully.

E. C. Mahan spoke of the difficulties of applying fair prices to a large number of small operations, such as is the case in Tennessee, but that nevertheless he is in full sympathy with the principles enunciated by Secretary Hoover.

E. L. Douglass, of the First Creek Mining Co., emphasized the need of bringing the operator and the ultimate consumer closer together. He said the operators themselves could do much to prevent the sale of coal by brokers on consignment if they would insist on selling direct wherever possible. Mr. Douglass' remarks brought a statement from Secretary Hoover to the effect that it is not right for the operators to sacrifice profits which they could get if an intermediary is to appropriate that profit. He gave that as one of the main reasons why he thought district committees could be helpful, as he believes they could require from purchasers the name of the ultimate consumer. This also would enable the committees to establish the extent of that consumers' need. In that connection Mr. Hoover said it might be necessary to build up a larger organization for the purpose of checking stocks. Mr. Hoover also emphasized again that there is no way of compelling anyone to act in the interest of the whole public, except to give such publicity as the government is capable of securing to the refusal of those who will not co-operate.

When some fear was expressed as to the legality of the co-operation proposed Mr. Hoover pointed out that the Attorney General had declared that it is entirely legal to co-operate to hold down prices in the public interest, such an activity in no way coming within the field of restraining trade. He said that the Attorney General would have a representative on the committee in Washington which would

act as a clearing house for the regional committees, and if he thought advisable could have a representative on each of the district committees. He declared emphatically that there is no ground for any timidity in discussing such situations with government officials, as it in no way could be interpreted as wrongdoing.

W. G. Ord asserted that a runaway market at this time would be one of the most disastrous things that could happen. He appealed to the newspapers to do their share in preventing a buyers' panic.

E. E. White expressed entire approval of the necessity of regulating distribution so as to insure necessary supplies for all. He pointed out that the navy already had stopped shipments, but he called attention to a large railroad taking large daily shipments from his district when he understood its stocks already were very large. He said he realizes that smokeless coal is not being distributed properly. He said that 97 out of 100 operators in his district want to do all they can to help the public through this emergency. The other three, he said, felt that profits should be gaged over a period of ten years, so that fat years could offset the lean years. Erskine Ramsay said that prices are low in Alabama and that the state is producing only two-thirds of its normal output, but that the operators there will co-operate with the government.

SAYS OPERATORS ENCOURAGE SPECULATORS

Charles Jacobs defended the jobbers. He said operators encourage the speculators because many of them hold their spot coal until 4 p.m., when they accept the highest bid which they have received during the day. He said this policy of opening bids at 4 p. m. cannot be interpreted as serving the public. It was in the course of these remarks that he made the statement that there is some coal on the tracks for which operators are asking \$6 a ton. This remark became a storm center of the conference. A number of operators declared that the mention of \$6 is unfortunate, as the press is inclined to represent the exceptional price as the average price. Some of the operators expressed doubt if any coal at all had been offered as high as \$6. Several appeals were made to the representatives of the press who were present not to regard the statement of \$6 coal as applying to the average. Finally Mr. Hoover was asked if he would not make a statement as to the average prices. This he emphatically did, saying the great bulk of prices range from \$2.25 to \$3. In a few instances prices as high as \$4.50 have been traced. He said he knows of no case where coal sold for \$6.

Julian Huff suggested that \$6 coal should be traced back and its history learned, as well as any other coal selling at exorbitant prices. In this way, he believes, responsibility could be fixed.

It was brought out at the meeting that more tonnage was handled on the Big Sandy Division of the Baltimore & Ohio on May 14 than ever has been handled in one day in the history of the road. It was pointed out, however, that the territory served by that line was forced to limit its output because of the inability of the railroad to handle the maximum amount of coal that can be produced. It was stated that the line has not been built up since the war.

Despite Mr. Hoover's efforts to guide the discussion away from the strike, he was not at all times successful. Several bitter references to terrorism against non-union workers crept into the discussion. The necessity of employing deputies to protect men and property was held to be a legitimate addition to the cost of producing coal. In many cases overhead is being multiplied by the fact that mines are not being worked at capacity.

H. H. Gross, president of the New River Co., of Boston, explained that his mines went on a non-union basis only in December. He said the wage rate was that of the autumn of 1917. He said he was greatly surprised when about 90 per cent of his men walked out as soon as the strike was called.

The question of reconsignment came up and it was shown that the railroads have it within their power to stop the holding of coal for that purpose. Colonel Wentz said that the American Railway Association in 1920 had refused to

allow reconsignment more than once, and that action stopped the pyramiding of prices.

After nearly two hours of discussion Mr. Hoover asked for a vote on the proposals to set up the district and national committees, the plan to make direct deliveries to consumers, and to the plan for the consolidation of buying. Mr. Bradley moved the adoption of the proposals. Mr. Ramsey seconded the motion. There was only one vote against Mr. Bradley's motion. It was cast by G. H. Caperton, president of the New River Coal Co. of Charleston. In explaining his vote, Mr. Caperton said such a plan had been tried out and had proven an absolute failure, and as a result he hesitated to enter into anything which smacks of price fixing. He said it was his desire not to be interfered with in the conduct of his business. Mr. Hoover stated that it is remarkable that there should be but one dissenting vote. He said he is opposed at all times to any extension of the government arm into business except when the public has a dominant interest that must be protected. He set forth that all experience shows that the public interest must not be disregarded, or the public will take control. If conditions should arise which would cause the public to take a grip on the coal industry, he said, it would take twenty-five years to loosen it.

After some discussion the operators agreed that the Garfield prices should be the basis for computing fair prices at the mines. A steering committee consisting of J. G. Bradley, C. E. Bockus and S. Pemberton Hutchinson was appointed. This committee then selected a committee to prepare recommendations for the conference. This committee was made up as follows: Virginia—C. E. Bockus; Kentucky—E. L. Douglass, C. F. Richardson, F. W. Wilshire; Tennessee—E. C. Mahan, Alexander Bonnyman; Pennsylvania—Tracey Guthrie, S. P. Hutchinson, Julian Huff; Alabama—Erskine Ramsay; West Virginia—J. G. Bradley, E. E. White, W. D. Ord, T. B. Davis, C. C. Dickinson; Maryland—A. W. Calloway; Washington—Walter Barnum; Utah—Moroni Heimer.

COMMITTEE OF COAL MEN MAKES RECOMMENDATIONS

This committee brought out the following report:

"The preliminary conference of some fifty producing operators with Secretary Hoover made the following recommendations:

"That a general conference of operators now producing coal be called to Washington at an early date to consider plans for the better co-ordination of coal distribution and the prevention of profiteering.

"The following plan, or such amendment to it as may be proposed, to be laid before the conference:

"(1) That representatives of that conference be appointed, who, together with representatives of the government departments and the operators, should be a standing committee to advise upon the co-ordination of coal distribution between districts.

"(2) That each district be asked to form a committee that should co-ordinate distribution and to co-operate with the standing committee.

"(3) The various committees should take measures to assure the direct progress of coal direct to the consumer in proportion to his needs.

"(4) The Garfield prices should be the basis for computing sales prices with such adjustments as are necessary to meet such changed conditions as to costs and other factors, as will be fair to the public and the operators."

Those present at the preliminary conference were:

D. B. Wentz, president, Stonega Coke & Coal Co., Philadelphia, Pa.
Erskine Ramsay, vice-president, Pratt Consolidated Coal Co., Birmingham, Ala.
E. C. Mahan, president, Southern Coal & Coke Co., Knoxville, Tenn.
Alex. Bonnyman, president, Blue Diamond Coal Sales Co., Knoxville, Tenn.
L. C. Crewe, president, LaFollette Coal & Iron Co., LaFollette, Tenn.
E. L. Douglass, vice-president, First Creek Mining Co., Cincinnati, Ohio.
R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky.
C. E. Connor, Elkhorn & Shelby Creek Coal Co., Esco, Ky.
Henry La Viers, Southeast Coal Co., Paintsville, Ky.
A. D. W. Smith, Southeast Coal Co., Philadelphia, Pa.
C. F. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.
S. Pemberton Hutchinson, president, Westmoreland Coal Co., Philadelphia, Pa.

Julian B. Huff, Keystone Coal & Coke Co., Philadelphia, Pa.
 T. W. Guthrie, president, Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
 B. Dawson Coleman, Nant-Y-Glo Coal Mining Co., Philadelphia, Pa.
 J. B. Brunot, vice-president, Irwin Gas Coal Co., Greensburg, Pa.
 W. D. Ord, Roanoke Coal & Coke Co., Landgraff, W. Va.
 T. E. Davis, president, Island Creek Coal Co., New York City.
 J. D. Francis, vice-president, Island Creek Coal Co., Huntington, W. Va.
 W. H. Cunningham, Gano-Moore Coal Mining Co., New York City.
 H. H. Gross, president, New River Co., Boston, Mass.
 J. C. McKinley, president, Richland Mining Co., Wheeling, W. Va.
 Walter R. Thurmond, Argyle Coal Co., Logan, W. Va.
 E. E. White, president, E. E. White Coal Mining Co., Glen White, W. Va.
 G. H. Caperton, president, New River Coal Co., Charleston, W. Va.
 W. P. Tams, Guyan Collieries, Corp., Tams, W. Va.
 P. M. Snyder, East Gulf Co., Mt. Hope, W. Va.
 Walter Barnum, treasurer, Pacific Coast Co., New York City.
 A. W. Calloway, president, Davis Coal & Coke Co., Philadelphia, Pa.
 Cadwalader Jones, vice-president, Big Elkhorn Coal Co., Ashland, Ky.
 C. H. Mead, Mead-Tolliver Coal Co., Beckley, W. Va.
 Charles Jacobs, vice-president, Whitney & Kemmerer, Philadelphia, Pa.
 W. E. E. Koepler, secretary, Pocahontas Coal Operators Association, Bluefield, W. Va.
 G. B. Seyms, manager of sales, Westmoreland Coal Co., Philadelphia, Pa.
 L. E. Wood, president, Central Pocahontas Coal Co., Welch, W. Va.
 Ed. Griever, Huntington, W. Va. (attorney).
 J. G. Bradley, president, Elk River Coal & Lumber Co., Dundon, W. Va.
 C. J. Neekamp, secretary, Northeast Kentucky Coal Association, Ashland, Ky.
 L. F. Heller, Madeira-Hill Coal Mining Co., Phillipsburg, Pa.
 D. E. Poston, president, Poston Consolidated Coal Co., Columbus, Ohio.
 F. W. Wilshire, vice-president, Consolidated Coal Co., New York City.
 R. G. Wildermuth, vice-president, Lorain Coal & Dock Co., Columbus, Ohio.

U. S. Chamber of Commerce Discusses Coal

VARIOUS phases of the coal situation were discussed by speakers at the annual convention of the U. S. Chamber of Commerce in Washington, May 16-18. Senator Sutherland, of West Virginia, opposed government regulation of the coal industry, as proposed in various bills introduced in Congress.

Eugene McAuliffe, president of the Union Colliery Company, St. Louis, Mo., said that if the present-day labor leaders do not rise to their opportunity one of two things will happen, either labor will slip back twenty years or, what is more probable, a "Cromwellian character will appear to snatch the sword of leadership out of the hands of the men who at best are reactionaries though living in a progressive age."

"Up to a few days ago," he added, "the one point of agreement between mine labor and employers was that the industry was overdeveloped. For some reason best known to themselves, certain representatives of the coal operators have recently decided that no overdevelopment exists. The evidence of such is too well grounded, however, to be successfully disputed. If the industry is beginning to be looked upon as not entirely the property of the coal operators and the mine workers, such is due to the fact that the consuming public are becoming tired of having their individual coal cellars, bins and storage yards periodically turned into prize-rings. As a matter of fact the exhibition of fight shown in these recurring conflicts is not equal to the entrance fee paid by the general public."

"Far beyond the refusal of certain coal operators to meet John L. Lewis prior to April 1 stands the importance of the persistent disinclination of many coal operators to report the facts relating to the coal industry, including those pertaining to the labor of which they complain. It is not the province of the government to take over and conduct or to unduly regulate private industries, thereby turning the nation into an army of office seekers without individuality or initiative; likewise the fragmentary and partisan statistics now furnished by the mine workers' organization and the associations of the coal operators are insufficient to satisfy the public as to the real facts surrounding what is looked upon as a rather dark industry."

"We are as a nation coming back. The mismanagement of

our coal labor affairs, beginning with our failure to deflate our war and post-war coal-wage scales on April 1, 1921, checked the coming-back process and cost the mine workers and labor at large many millions of dollars. Like all previous deadlocks this one will be broken. What we want is a permanent peace and while a repetition of the happening of Nov. 1, 1919, seems unthinkable, yet it may recur if nothing higher than mob law is to govern our capital goods partnership relations. Reactionary attitude on the part of labor leaders and the averments of the coal operators backed by fragmentary statistics do not offer a sufficient foundation for industrial peace. Our need is for

(a) The enforced incorporation of all labor organizations with provision that such be subject to all of the laws, rules and regulations that govern corporate or partnership holdings of capital, including the payment of federal income and excess profits taxes and the repeal of all laws that place capital labor on a plane apart from capital goods.

(b) The reformation of the United Mine Workers organization including the elimination of the check-off with such revision of policy as will insure a better recognition of the relation the industry bears to our national economic life, and a decent regard for public opinion; the organization to transform its present policy of resistance to greater individual productivity into one of productivity, including the giving of proper encouragement to the installation of labor-saving machinery.

(c) Full recognition on the part of the employer of the fact that the mine worker is entitled to that fair living wage consistent with an American standard of living, regardless of whether he mines coal north or south of the Ohio and Potomac rivers; the employee recognizing with equal force that to earn he must produce.

(d) The enactment of legislation that will insure a full finding of facts concerning the industry.

(e) From the facts so secured the Secretary of Commerce should publish promptly, monthly and annually, the essentials that concern the public including mine labor.

(f) From the evidence so secured the Secretary of Commerce should keep the Interstate Commerce Commission informed as to the ability of the then existing mine development to serve the full coal needs of the nation together with that required for export and bunkering.

(g) The transportation act should be so amended as to require every railroad desirous of rendering transportation service to a coal mine to secure from the Interstate Commerce Commission a certificate of convenience and necessity before entering or serving same.

(h) Inauguration through the Department of Commerce of a campaign of education and encouragement of the public toward the elimination of seasonal demand for coal, including a reduction in coal freight rates during the storage season.

"The suggestion that incorporated labor pay taxes may seem revolutionary. In practice no taxes need be paid, for the reason that the revenues collected could be easily made to balance the legitimate expenses. It is the measure of accounting required by the government that would furnish the laboring man who is the stockholder the assurance that his contributions were being used for proper purposes and the expenditure of large sums for illegal purposes would then automatically stop.

"With a deflation of mining costs and a resumption of general industrial activity the demand for coal will in three years overtake the present overdevelopment and the surplus men now hanging on the fringe of this great industry will gradually be transferred to other lines of endeavor."

W. R. Coyle, vice-president of Weston Dodson & Co., Inc., discussed "Some New Ideas in Merchandising Coal." He suggested that in the distribution of coal there be organized a complete production and distribution organization made up of a series of units, each one a corporation following the lines of the American Telephone & Telegraph Co. He would have this corporation enter every city as Rexall has entered every city and large town, electing to membership the most progressive and best-located dealer. "Make the dealer a partner in the entire enterprise," Mr. Coyle said. "Buy an interest in his plant, and sell him an interest in the production of the material he will merchandise. School him to follow a general merchandising plan. Make him a part proprietor and an interested owner in those mines which supply the stock on his counters."

Mr. Coyle pointed out that in our present scheme of organization there is a bigger waste of capital than anyone realizes. A consolidation of this kind means that from 17 to 22 per cent of the capital now invested in production and distribution would be released for productive industry.

"In many states and towns the two or three dealers in coal and building material are being solicited by salesmen from ten coal houses, a like number of cement companies, lumber salesman, and a countless number, an army of perhaps 200 men per month, and the business of the town will not pay the expenses of six of these men," said Mr. Coyle.

Railway and Coal Men in Convention in Chicago, Discuss Fuel Problems

FUEL problems of the railroads and the relations between railroads and the coal industry were thoroughly discussed this week at the fourteenth annual convention of the International Railway Fuel Association in Chicago. The convention, which was held in the Auditorium Hotel, was notable for the number of coal men in attendance. The association, always recognized as an active one in matters pertaining to coal, performs a real service to both the coal industry and the railroads by offering first rate opportunity for close exchange of ideas mutually valuable.

Some of these mutual problems were handled "without gloves" in the convention. C. G. Hall, general manager of Walter Bledsoe & Co., coal operators, of Terre Haute, Ind., for instance, minced no words when he spoke on the question of "Assigned Cars for Railroad Fuel." In his address he pointedly blamed the railroads of the country for many of the ills of the coal industry, declaring that if they would hold sufficient coal-handling equipment to take care of the country's coal production during peak production, "the troubles of the industry would soon vanish, as the market would be stabilized and prices would hug the cost of production so closely that the number of active mines would be reduced and confined to a capacity to meet the actual peak requirements." He declared that the railroads, through an interpretation which the Interstate Commerce Commission has chosen to put upon the Transportation Act of 1920, are now able to discriminate in old-time fashion against unfavored mines in days of car shortage.

PROPOSES RULES GOVERNING CAR DISTRIBUTION

Believing that he should be constructive instead of merely critical, Mr. Hall proposed three rules to govern distribution, interchange and movement of open-top cars during periods of rail congestion and peak demand for coal, which he said would afford the desired relief to the public and at the same time enable railroads to protect their fuel supply without undue confiscations of commercial shipments. His three rules are these:

(1) A railroad may designate and assign cars (owned or leased by it) for company fuel loading, but such cars, when placed at a mine for loading, must be counted in the pro-rata share of cars to which such mine is entitled, based on its rating.

(2) Cars owned or leased by a foreign railway may be designated and assigned for its company fuel loading and shall be given to the mine to which consigned if such cars do not exceed the pro-rata share of cars to which such mine is entitled, based on its rating. All cars so assigned and placed at the mine for loading must be counted in the pro-rata share of cars to which the mine is entitled.

(3) Open-top cars must be loaded only in line for home, and if no such loading is available they must be immediately returned empty to home line at nearest junction.

In his opening address to the convention on Monday, L. W. Baldwin, vice-president of the Illinois Central Railroad Co., preached the "count-the-scoops" doctrine of fuel conservation on a railroad, declaring that scrupulous conservation not only pays the railroad in reductions of fuel bills but in good will from a public that is entitled to expect its carriers to cut transportation costs. T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, fresh from much activity at Washington and throughout the East in the strike, spoke on government and the coal industry, and F. S. Peabody gave the convention some astonishing figures on the cost to the coal consumer of idle days at the country's coal mines.

Mr. Watkins declared railroad purchasing agents "fail lamentably" in their responsibilities when they shift large coal contracts from mine to mine to save a few cents a ton. This disorganizes the coal industry, causing labor troubles and market disturbances, and upsets industry generally, thus injuring the railroads. Coal buying should be a "matter for executive management."

Mr. Watkins blamed railroads for part of the overdevelopment of mines in that the roads often encourage unneces-

sary operations in order to get freight. He surprised some by saying that the coal industry doesn't need stabilizing as badly as other industries. Considered nationally "there is no other industry wherein production is as uniform between summer and winter." For nine years, he said, soft-coal summer production has been above 45 per cent of total annual production.

Stabilizing of coal production and demand should be gained by eliminating strikes from railroads as well as at mines. Markets cannot be steadied by storage, he said. There is seventy million tons storage capacity now in the country, but buyers will not use it. Mr. Watkins is against government intervention, but favors investigation. Probing would prove today's main trouble is that the coal industry was saddled with too high wages by the Bituminous Coal Commission and unions were too shortsighted to modify them. This encouraged overdevelopment of non-union mines. He presented figures to show that the miners can stand a heavy wage cut. He declared district, not national, agreements should end the strike.

The convention began Monday morning and continued until Thursday afternoon. A report of the convention in more detail will appear in *Coal Age* next week.

Blizzard Defense Opens Case; Motion to Direct Verdict of Not Guilty Overruled

PRESENTATION of the case of the defense began May 19 when Judge Woods, in Circuit Court at Charles Town, W. Va., overruled a motion to direct a verdict of not guilty in the trial of William Blizzard, a mine-union official charged with treason as the leader of the armed march last summer against Logan County non-union coal strongholds.

Judge Woods held that there has been evidence sufficient for consideration by the jury that war existed and had been levied by the armed men. He also reviewed the argument that treason against a state was impossible because of the division of authority between State and Federal Governments and held that this position could not be maintained.

Declaring that it was necessary to determine whether the purpose of levying war was private or against the state, the judge held that if the purpose were to coerce the government or the state to adopt or abandon any public policy it would be war against the state and would mean treason. What the purpose was, Judge Woods ruled, ought to go to the jury for determination.

That Blizzard went to Logan County last summer as a result of requests by army officers while members of the union of which he is an official were fighting against state and county officers was testified as the first step of the defense.

Two witnesses for Blizzard, both testifying as to his presence in Charleston at times when the prosecution's testimony showed him on the march that preceded the Logan battles, were called. One, William Petry, vice-president of District 17 of the union, also said he sent Blizzard, a sub-district president, among the fighting men to induce them to return home, acting on the request of Brigadier General H. H. Bandholtz.

H. W. Houston, chief counsel for the defense, in opening his case, said it was conceded that Blizzard was in Logan County while fighting was going on there, but that he was sent there as a result of federal officers' request and that during the time state testimony showed him to have been leading some of the marchers he was at Charleston or at his home in St. Albans.

Brigadier General H. H. Bandholtz, who was expected to be the chief alibi witness for the defense, failed on the stand, May 22, to recollect some of the things the attorneys are said to have hoped he would substantiate. The General testified that Blizzard went with him to Racine on Aug. 27, but he did not recall seeing him after they talked with some of the armed men there. He could not recall conversations with the vice-president of District 17, United Mine Workers, on Sept. 1, as a result of which the defense contends Blizzard was sent to Blair and other Logan County towns, not to assist the miners in their attacks on state and county forces but to get them to go home.

Seventh Week of the Coal Strike

EDITORIAL REVIEW

THERE was little change in the coal-strike situation during the seventh week of the strike. Production continues at between four and four and a half million tons per week, mainly from Middle and Southern Appalachian areas. Prices continue their upward trend, although there is some prospect that this tendency will be checked through the efforts of Secretary Hoover of the Department of Commerce. Mr. Hoover will confer in Washington, May 31, with a gathering of all coal operators whose mines are still producing, to discuss ways and means of effecting a direct from-mine-to-consumer distribution, designed primarily to reduce the opportunity for speculative purchase and holding of coal by middlemen. This is the only activity in connection with the strike that is as yet credited to Washington.

Practically all the operating mines in West Virginia and in Kentucky have orders for their maximum production. Demand for coal from eastern Kentucky and from the Kanawha high-volatile field considerably exceeds the ability of those fields to supply. On the other hand, Alabama and southwestern Virginia could handle more orders than they have on their books. The same is true of most mines in Tennessee. Operations in Utah, Colorado, New Mexico, Texas and Washington are being limited by lack of market.

A few cases of distress have been called to the attention of officials at Washington. These are confined to small utilities and to two or three small railroads. Thus far, no single case of a manufacturing plant being short of coal has been reported to Washington. During the last two weeks some trouble has been occasioned by car shortage on the Louisville & Nashville R.R., but steps were taken promptly to remedy that situation. By transferring cars from the railroads serving mines in the union fields it will be possible, it is believed, to give all operating mines 100 per cent car supply.

That certain large wholesalers recently have been sending out circulars so worded as to alarm consumers and to contribute to a buyers' panic has been established by government officials who are in possession of copies of this material.

Illinois Operators Make New Effort To Get Action Out of Farrington

FOLLOWING out their general policy of making it plain to everybody that they want to settle the mine strike by separate agreement, the operators of Illinois made another move last week. On May 18 they wrote Frank Farrington, president of the Illinois mine workers' union, stating that they were tired waiting for a conference with the miners and asking him where he stands. A day or two before, W. K. Kavanaugh, president of the Fifth and Ninth District Operators' Association, wrote James J. Davis, Secretary of Labor, asking him to declare himself in favor of separate agreements by states between miners and operators. At the end of the week no answer to either letter had been announced, though it appeared, from a statement made by Mr. Farrington's secretary, that the Illinois mine leader had been writing John L. Lewis, president of the United Mine Workers of America, recently, asking in vain for permission to make a separate deal in Illinois.

The Western operators watched with interest the price conference last week of Secretary Hoover of the Department of Commerce with the non-union operators of the South and East. Many words of commendation for Mr. Hoover's program were heard about Chicago.

The letter to Mr. Farrington, dated May 18, and signed by Rice Miller, president of the Illinois Coal Operators' Association; W. K. Kavanaugh, president of the Fifth and Ninth District Operators' Association, and H. C. Adams, president of the Central Illinois Operators' Association, is as follows:

Not only Illinois operators but that part of the public who are consumers of Illinois coal would like to know just where you stand with respect to the present mine-labor situation which is keeping Illinois mines idle and just what you propose to do about

it. Their sense of public responsibility will not permit the Illinois operators to omit such inquiry at this time.

In answer to previous inquiries of the Illinois coal operators, made prior to the expiration of our last Illinois wage agreement, you advised us in a telegram under date of March 15, that your District Executive Board were of the opinion that President Lewis still had a "lingering hope" that in some way, by his direct effort or with governmental assistance, a four-state wage conference might be secured and a general, countrywide wage agreement entered into.

At your invitation also the Joint Executive Board of Illinois operators and miners had a meeting in Chicago on March 29, 1922, in order that you might technically meet the requirements of the 32d section of the wage contract that was to expire two days later. Illinois operators then advised you of their entire willingness to proceed at once with negotiations for a new wage contract, but were again told that the Illinois Miners' Executive Board could not, under existing circumstances, enter into such negotiations or indicate a date when such conference might begin, although again every possible assurance was given of your determination to maintain such proper relationship as would permit adjustment of another contract should an emergency, within your judgment, arise that would warrant prompt action.

Meanwhile, all those efforts which you suggested Mr. Lewis was to make have been undertaken and apparently with neither success nor prospect of securing such conference as he desired. Illinois mines have now been idle for seven weeks. Not one move has been made by you or your associates to even undertake negotiation for a new wage scale on which work might be resumed, nor to the best of our knowledge is anything of the sort in prospect. We can see no reason whatever that would justify itself with the public for your attitude or lack of action in the premises, and it is on this account that we would appreciate hearing from you promptly.

Anthracite Operators Propose General Wage Reduction and Five-Year Contract

THE long looked for reply of the anthracite operators to the demands of the mine workers was made public at the session of the joint subcommittee of operators and miners on May 18 in New York City. The operators propose that contract rates be decreased 18 per cent; that day rates for men be reduced \$1.20 per day or per shift and that rates for boys be reduced 72c per day. They also propose a five-year contract, subject, however, to annual adjustments as to wage rates only.

It also is proposed that on Feb. 1 of each year a joint committee of mine workers and operators meet to adjust wages to be effective from April 1 following and that in case no agreement shall have been reached by March 1 the matter be referred to a commission of five persons, to be appointed by the Presiding Judge of the United States Circuit Court of Appeals for the Third Judicial Circuit.

The reply of the operators was taken under consideration by the representatives of the miners on the joint committee, and later was considered by the wage scale committee of the union, which had been summoned to New York City in anticipation of the reply being received.

The operators' reply to the miners' demands, in full, will be found on page 890 of this issue. The producers published their reply in the form of a 4-column advertisement in the newspapers of New York City, Monday, May 22.

The joint subcommittee arranged to meet again on May 23, when the miners were formally to make known their reply to the operators' answer to their demands, which they have announced to the press that they will reject.

Private and Co-operative Mines Ordered Closed by Ohio District Miners' Union

STRICT orders were issued May 12 by the Ohio organization of the United Mine Workers, closing every licensed mine in Ohio. Previously many mines, especially those owned and operated by brick and clay-products plants, were permitted to operate upon the understanding that no coal was to be mined for commercial purposes. Many of the brick plants in Ohio have their own coal mines and operate only to furnish fuel for their own use. The new order becomes effective in eight days in order to allow brick and other clay products now in kilns to be finished. Previously orders had been issued by the Ohio organization closing all mines in the Uhrichsville and Tuscarawas fields and also in the eastern Ohio field, where a number of mines were

supplying public utilities and schools and hospitals. The new order, if obeyed, will cause the closing of every mine in Ohio that is now being operated on a co-operative plan or that is not a stripping plant.

Rabbi Wise Accepts Invitation to Probe Conditions in New River District

THOMAS L. LEWIS, secretary of the New River Coal Operators Association and a former International president of the United Mine Workers of America, has sent a letter to the Rev. Dr. Stephen S. Wise, of the Free Synagogue of New York City, inviting him and four others to make an investigation of present conditions in the New River district in West Virginia in order to ascertain at first hand whether the 80,000 miners and their families are facing starvation, as has been charged.

The letter, which was in reply to statements made in New York City by representatives of the miners in West Virginia, is as follows:

"In an advertisement appearing in the press of a public meeting at the Town Hall on Thursday, May 18, it is stated that you will preside. In the advertisement in question as well as in appeals for funds that have been sent broadcast by the West Virginia Miners' Relief Committee, which is in charge of Thursday night's meeting, it is represented that:

"Eighty thousand men, women and children are facing a slow and frightful starvation' in the coal fields of West Virginia.

"That there is a deliberate purpose on the part of the coal producers to starve workers into submission to a wage scale below the cost of living."

"The whole tone of these communications is to the effect that all right-thinking men should come to the aid of the West Virginia mine workers."

"For me to assert that the picture so drawn is untrue and wholly misleading—especially as a basis of an appeal for relief funds—would merely be for me to set up my statement as against that of someone else. If there is any substantial foundation for the statements made as to the condition and the treatment of West Virginia coal miners it is, in my opinion, most desirable that you and other public-spirited citizens should find out the truth for themselves.

"I was at one time the International president of the United Mine Workers of America. I spent twenty years of my life as a coal miner, and am still interested in seeing the miners get justice. At the present time I am living in Charleston, W. Va., and am thoroughly familiar with conditions in the coal fields of that state. I say without any hesitation that there is no necessary starvation, or even privation, among the coal miners of West Virginia. Even under the depressed conditions of the coal industry and of industry in general there is enough work at good wages to enable every miner in West Virginia to make a living.

"Which of these descriptions—the Relief Committee's or mine—is correct?

"To enable you and any disinterested associates you may select to find out the truth I am authorized to extend to you and, say, four associates an invitation to visit the West Virginia coal fields and find out exactly what are the living and working conditions of the miners.

"I cannot, of course, speak for any district except the New River, but I would call your attention to the fact that it is this district where conditions are alleged to be the worst. I am confident, however, that any investigators associated with you would receive a thoroughly satisfactory welcome in other districts. The New River Coal Operators' Association will pay all the expenses of such a visit of investigators to the New River coal fields and place every facility within its power at your disposal for finding out in your own way what the conditions really are.

"This invitation is extended in the most serious spirit. The coal operators of the district I represent have been assailed as human monsters. That is how I would describe them if what you and your associates have said about them

is true. It seems to me that it is your duty to the public as well as an obligation demanded by a sense of fairness to find out what are the conditions in the West Virginia coal industry, and then to tell the truth about it in your own way."

To this, according to press reports, Dr. Wise replied:

"We will accept Mr. Lewis' invitation, but will undertake the investigation with independent funds, for we would not touch a penny of the operators' money."

Utah Aliens Ordered to Give Up Their Guns

AS a result of Governor Mabey's visit to the Utah coal camps, all strikers in Carbon County who are not citizens of the United States have been ordered to hand in any weapons they may possess to Sheriff Kelter by noon of May 22. If they refuse, it is highly probable militia will be ordered out. This is one of Utah's methods of settling its coal-mine strike disorder, which is believed to have been caused principally by foreigners. The Governor is invoking a state law which prohibits aliens from carrying arms. The coal camps are quiet again but the situation is tense. Many union organizers have been sent to Utah from other states. They appear to have made some progress.

Dinner to Rail Executives Taken to Mean Rate Cut Has Become Political Issue

THE President's dinner, May 20, at which the railroad executives were guests, is conclusive evidence to many traffic men that railroad rate reduction now is a political issue. There is a widespread belief in Washington that the President called in the railroad executives after he had learned that the Interstate Commerce Commission could not see its way clear to order any substantial reductions in freight rates. There is a tendency to criticize the commission for its failure, after over five months' consideration, to get together on a definite finding rather than create a situation where the President practically has been forced to take a hand in rate making.

A committee of seven of the executives held a two-hour session Monday, May 22, with the Interstate Commerce Commission. Although a formal announcement made by Daniel Willard, one of the conferees, merely said the meeting was "for the purpose of discussing the rate situation," the session generally was regarded as the first step toward possible compliance with the President's request and toward carrying out the agreement made at the White House meeting. Mr. Willard's statement said that another meeting would be held on Thursday.

Missouri Retailers Caution Public Against Getting Panicky Over Coal Situation

THE public of Missouri will be cautioned against getting panicky over the coal situation. This advice from coal dealers was authorized at the second annual convention of the Missouri State Retail Coal Merchants' Association, at St. Louis, May 16. The association, with a membership of 147 dealers scattered all over Missouri and across the Arkansas and Illinois lines, adopted resolutions touching upon the strike and coal prices, opposed government intervention in the strike, urged railroads to prepare for an unusual demand for coal-carrying equipment immediately after the strike, declared for a state law requiring that each retail dealer in coal be licensed and required to maintain an office, scales and storage space for coal the year around, a law protecting the public against misrepresentation of coal quality by any wholesaler or retailer, and that a penalty be assessed by law against "any dealer selling coal at a loss at any time to a certain number of customers, knowing that when times of stress come he can assess the amount of such loss against the unfortunate buyer."

H. F. Shrankler, of Sedalia, was elected president. W. K. Kavanaugh, president of the Fifth and Ninth District Operators' Association of Illinois, was the principal speaker at the evening session.

Retail Coal Merchants Hear Profiteering Condemned; Strengthen Their Association

BY E. W. DAVIDSON

THREE HUNDRED retail coal men of the United States, at the fifth annual convention of the National Retail Coal Merchants' Association, in Chicago, last week, heard profiteering by operators and jobbers denounced in the well and familiarly known "no uncertain tones," heard Senator William H. King of Utah inveigh against government interference in business, resolved that the battle against crookedness in retail coal selling and against government and public coal yards must go on, and girded up their loins for more intensive association work during the coming year.

There was no loose talk at the convention about prosperity, present or future. There was little time spent in meaningless oratory or "high diggings." Instead the convention stuck pretty closely to brass tacks, making it clear to the members that the retail coal business is seriously endangered by the unprincipled hangers-on and by public misunderstandings of one sort or another. To meet the first it affirmed anew its declaration of principles adopted last year at Richmond, Va., thus pledging the members to uphold it, and to counteract warped public opinion it decided upon a course of publicity aimed to educate those writers and editors who do most to instruct and inform the people.

Homer D. Jones, of Chicago, was elected president of the association to succeed Roderick Stephens, of New York City.

Both L. W. Ferguson, president of the Chicago Coal Merchants' Association, and Marshall E. Keig, sales manager for the Consumers Company of Chicago, declared on the first day of the convention that non-union coal operators have already boosted their prices so high that those prices are bound to be reflected in retail coal bills, and that, as usual, the sins of the operator will draw upon the head of the retailer the condemnation of the public.

"Three weeks ago," said Mr. Ferguson, "the producers asked \$1.75 for Pocahontas coal. Today they ask at least \$3.50. If we pay that price, we are compelled to pass it on to the consumer."

In his address on trade associations, Executive Secretary Joseph E. O'Toole, of Philadelphia, who was employed a year ago by the association partly because he understands the machinations of official Washington, said trade associations in this country are doing a tremendous work in combating unfair competition and that by no other means can a trade properly defend itself. He reviewed some of the practices that afflict the retail coal business, such as the entrance of newspapers into the business to sell coal at less than cost plus a fair profit.

He said the association expects to work closely with Mr. Hoover in whatever program of helpfulness may be worked out.

The finance plan adopted provides that local, state and sectional organizations be assessed \$5 per member per year, payable quarterly; that individual memberships at \$25 a year be accepted where there is no affiliating local or sectional organization, and that the Canadian Retail Coal Association be admitted to membership for \$500. This, it is estimated, will raise \$40,000 a year. It is hoped to get \$20,000 more by solicitation among the larger distributors of coal.

Speaking on the sore question of what to do about the wholesaler or operator who short-circuits the retailer in retail trade, Mr. Stephens, retiring president, declared: "When you once know that a producer wants to deal both from the bottom and the top of the deck, quit playing with him. I am not advocating a blacklist. That is illegal. I am not suggesting concerted action, for the same reason. But each dealer should make an intelligent estimate of the situation and take appropriate action. A jobber who deals unfairly with a retailer in Kansas City is no fit man for a Chicago retailer to do business with. The concern that disregards the established retailer in Chicago should not be

supported by the retailer of Boston or New York, and so on."

Dealing with the matter of government and public fuel yards, the association's special committee reported that the government's yard in Washington is losing 75c. on every ton it delivers, or a total loss of \$150,000 a year. Its estimate that it could deliver coal for \$1 a ton was shot to pieces by the association's investigation, which set the actual cost at \$1.78. The investigation disclosed that the yard administration, in its \$1 a ton estimate, had made no provision for selling, credits, collections, executive salaries, advertising, postage, audits, bad debts, state taxes, federal taxes, excess profits taxes or for profits. The convention went on record in support of a bill now in committee at Washington abolishing the government yard.

At the banquet of the association on Friday evening F. S. Peabody, chairman of the board of the Peabody Coal Co., appeared, declaring he could not bear to stay away from any gathering of coal men for he would rather be with them than with any other class of people on earth, and that he had invited himself to make a speech. He was greeted warmly by the banqueters and roundly applauded when he had finished a few graceful remarks about coal men and their honor in business. Senator King, the speaker of the evening, took occasion to pay high tribute to Mr. Peabody's genius and business ability and said he is trying to put through a plan to have Mr. Peabody play a leading rôle in the future development of Utah's natural resources. The Senator declared government control and regulation of business is fundamentally wrong.

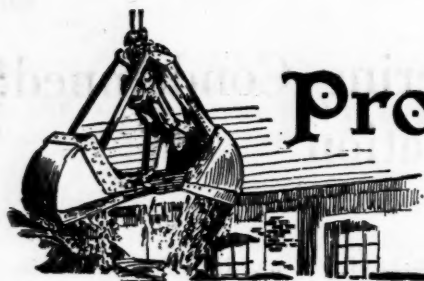
Cincinnati Meeting Studies Lake Situation

AT a meeting of railway interests, lake shippers and coal producers held May 16 at the Sinton Hotel, in Cincinnati, consideration was given the exchange situation as well as to proposals to hasten some of the season's tonnage to Lake Erie points. E. M. Whitaker and J. B. Parrish, of the Chesapeake & Ohio R. R., said that, judged by the rate that coal has been moving to the upper lakes, there was a possibility that considerable coal would go forward all-rail next winter. H. M. Griggs, of the Ore & Coal Exchange, supplied figures to show the necessity of taking the situation in hand. After a meeting of the joint conference the coal men got together, W. J. Magee, general manager of the Carbon Fuel Co., acting as chairman. C. R. Moriarity, representing the Kanawha interests, was elected chairman of the committee to investigate the situation with the following other members: C. R. Braggins, of Columbus, Ohio; C. J. Neekamp, of Ashland, Ky., and W. E. Tissue, of Macdonald, W. Va.

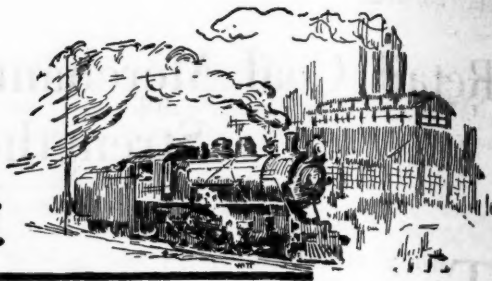
Engineers to Discuss Unemployment

PROGRESS in the nation-wide study of unemployment and business cycles now under way through thirty member societies will be a principal topic of discussion at the next meeting of the Executive Board of the American Engineering Council of the Federated American Engineering Societies to be held in Pittsburgh May 26 and 27. The movement to establish a National Department of Public Works, the proposal for an International Engineering Congress, patent legislation and many phases of Federation development will be considered. President Mortimer E. Cooley will preside and a large attendance of board members is expected.

ONE OF THE MOST curious things about American politics is that without a single historical exception a partisan is invariably a member of the other party.—*Washington Post*,



Production and the Market



Weekly Review

PRICES advanced last week an average of 51c. The volume of free coal is restricted, as the large non-union shippers are committed on their May output. Those who have coal for sale are the ones who are following a policy of getting the top of the market, selling from day to day and at most from week to week.

Efforts at Washington to hold the price down have but little affected the market quotations but have really introduced a general hesitation that may be the forerunner of an easing of prices. Several weeks must elapse before it will be possible to appraise the effort of the government to hold the market down. The meeting of non-union operators in Washington on May 31 will bring out more fully the plans of the Secretary of Commerce and the opposition of any who have no faith in such procedure. It is recognized that distribution plays an important rôle in controlling price, and in this the jobber, who now is speculator as well, is a factor. He is the key to distribution for the great majority of small producers.

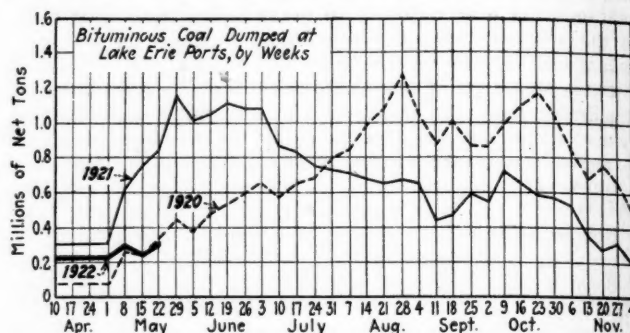
POOLING BY MIDWEST BUYERS CHECKS SPECULATION

In the Middle West pooling of buying by railroads and other large consumers is holding the market in check. Speculators found that much of the tonnage which they had shipped in on consignment was not readily taken and some low figures were taken to dispose of these cars. This steadying influence has been exerted in the face of a distinctly bullish market and early this week reduced Chicago prices on western Kentucky coals. Smokeless dropped 75c. per ton.

Competitive buying at Hampton Roads has brought Pool 1 coal up to \$7.15@7.50, f.o.b. piers, and the high-volatile price practically parallels this. New York, Philadelphia and Baltimore continue to take heavy tonnages by water and Southern coals also are moving all-rail over a widening range of territory.

New England and the Northwestern markets remain

comparatively quiet. In the former, stocks are heavy and although the supply has been shortened, consumers are not eager to buy at the ruling quotations. The rising prices have caused rehandlers in that section to be more cautious about commitments. The Northwest has been stirred only slightly by the unusual orders placed with the docks at the Head-of-the-Lakes for



shipment to Lake Michigan points and to distant rail destinations. Lake dumpings proceed at the rate of 250,000 to 300,000 tons weekly but much of this coal is being shipped to other lower Lake points.

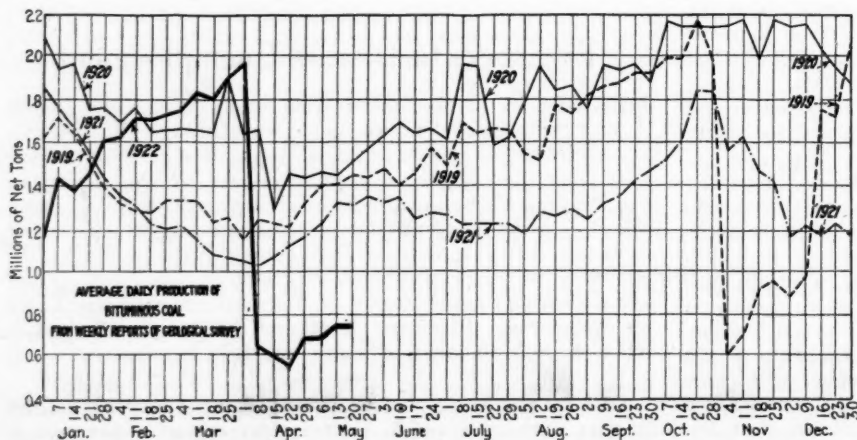
Coal Age Index of spot prices of bituminous coal increased 42 points to 303 on May 22. Spot prices are now at their highest point since late in 1920.

Production of soft coal is clinging close to four and a half million tons per week. Over the country as a whole the number of no-bills is steadily declining and in many sections does not exceed the number which is usual in normal times.

BITUMINOUS

"Having risen close to the 4,500,000-ton mark, the production of soft coal shows no further increase," says the Geological Survey. "From the returns so far received it is unlikely that the output of last week will equal that of the preceding one. Production of anthracite remains practically zero.

"The revised figures for the sixth week of the strike



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1922	1921
Apr. 29.....	4,175,000	6,984,000
May 6 (b).....	4,164,000	7,391,000
May 13 (a).....	4,421,000	8,009,000
Daily average.....	737,000	1,335,000
Calendar year.....	153,115,000	142,551,000
Daily av. calendar yr....	1,361,000	1,267,000

ANTHRACITE

Apr. 29.....	5,000	1,945,000
May 6.....	6,000	1,633,000
May 13 (a).....	7,000	1,938,000

COKE

May 6 (b).....	92,000	70,000
May 13 (a).....	96,000	69,000
Calendar year.....	2,493,000	2,989,000

(a) Subject to revision. (b) Revised from last report.

(May 8-13) indicate 4,421,000 tons of bituminous coal and 7,000 tons of anthracite. Up to the close of the sixth week the total output since the strike began was 23,826,000 tons of bituminous coal and 39,000 tons of anthracite, a grand total of 23,865,000 tons. It is significant to compare this figure with the output in the corresponding period of the 1919 strike. At that time the anthracite mines were working to capacity and the 11,816,000 tons which they produced, added to the 29,329,000 tons contributed by the bituminous mines which remained in operation, gave a total for the six weeks of 41,145,000 tons. Measured against the supply of newly mined coal in the earlier strike, the present strike is thus some 17,000,000 tons behind.

"During last week (May 15-20), the seventh week of the strike, production has so far not equalled that of the sixth week. A temporary decrease on Tuesday was followed by an increase on Wednesday, but on no day this week have loadings thus far equalled the high point of the week before:

	1st Week	2d Week	3d Week	4th Week	5th Week	6th Week	7th Week
Monday.....	11,445	10,772	7,898	12,131	11,598	13,118	13,399
Tuesday.....	11,019	10,658	10,041	12,377	12,160	13,266	12,726
Wednesday.....	11,437	10,961	11,088	12,622	12,861	13,445	13,421
Thursday.....	11,090	11,482	11,193	12,981	12,487	13,266	13,283
Friday.....	11,296	10,714	11,596	12,362	12,778	13,727	
Saturday.....	8,888	8,501	10,194	11,295	11,265	11,454	

"The record of production therefore suggests no marked change in the number of men on strike. No further increase is reported in shipments out of southeastern Kentucky and Tennessee, the only district where any considerable number of striking union miners have gone back to work. In Pennsylvania there is little change in the non-union districts affected by the strike, except for a very slight increase in shipments from the Connellsville coke region.

"Some districts are now producing at a maximum, but in others, particularly the Southern Appalachians and the fields of the Rocky Mountain states not affected by the strike, demand is not yet active enough to call out full-time production.

"Practically complete returns for all of the roads give the daily average number of coal loads unconsigned for the week ended May 13 at 10,753 cars of bituminous coal against a maximum of 30,730 in the week ended April 8. In five weeks' time the number of unbilled loads has thus been cut to one-third. It is now below the level of March 4 last, but still above normal."

All-rail movement to New England seems to have found a

How the Coal Fields Are Working

Percentage of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Apr. 3 to May 6, 1922 Inclusive	Week Ended May 6
U. S. total.....	45.6	55.7		
Non-union				
Alabama.....	63.5	64.6	71.0	72.1
Somerset County.....	55.5	74.9	65.2	32.0
Panhandle, W. Va.....	55.3	51.3	35.9	44.9
Westmoreland.....	54.9	58.8	66.6	58.5
Virginia.....	54.8	59.9	71.2	80.2
Harlan.....	53.3	54.8	44.6	57.0
Hazard.....	51.7	58.4	56.7	66.1
Pocahontas.....	49.8	60.0	72.3	80.5
Tug River.....	48.1	63.7	76.4	86.2
Logan.....	47.6	61.1	69.4	73.4
Cumberland-Piedmont.....	46.6	50.6	11.9	16.8
Winding Gulf.....	45.7	64.3	65.1	68.2
Kenova-Thacker.....	38.2	54.3	74.0	85.5
N. E. Kentucky.....	32.9	47.7	57.3	60.4
New River.....	24.3	37.9	8.6	10.8
Union				
Ohio.....	63.9	59.6	16.5	12.0
Iowa.....	57.4	78.4	0.0	0.0
Ohio, eastern.....	52.6	46.6	0.0	0.0
Missouri.....	50.7	66.8	0.1	0.5
Illinois.....	44.8	54.5	0.0	0.0
Kansas.....	42.0	54.9	10.6	12.0
Indiana.....	41.4	53.8	0.0	0.0
Pittsburgh.....	41.2	39.8	0.0	0.0
Central Pennsylvania.....	39.1	50.2	11.5	9.5
Fairmont.....	35.3	44.0	4.1	4.8
Western Kentucky.....	32.5	37.7	40.1	72.2
Pittsburgh*.....	30.4	31.9	0.0	0.0
Kanawha.....	26.0	13.0	1.3	2.2
Ohio, southern.....	22.9	24.3	0.0	0.0

*Rail and river mines combined.

† Rail mines.

‡ Union in 1921, non-union in 1922.

temporary level of about 700 cars per week. During the week ended May 13 there were 716 cars forwarded, only 13 cars in excess of the previous week. This tonnage is mainly contract fuel. The spot receipts have dwindled steadily since the inception of the strike and Tidewater coal is now being distributed over a wide area formerly held by Pennsylvania coals.

Lake dumpings during the week ended May 22 were 307,367 net tons—298,620 tons cargo and 8,747 vessel fuel—as compared with 261,579 tons during the preceding week. The movement for the season is 1,704,735 tons; in 1921 it was 3,640,008 and in 1920 the total was 1,174,628 tons to date. The coal now being dumped at lower ports is divided about equally between Head-of-the-Lakes destinations and for cross-lake shipment to Buffalo and other points.

The Northwest docks are still receiving inquiries from

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Apr. 24, 1922	May 8, 1922	May 15, 1922	May 22, 1922†
Smokeless lump.....	Columbus.....	\$2.85	\$2.85	\$2.85	\$3.50@3.75
Smokeless mine run.....	Columbus.....	2.00	2.40	2.90	3.00@3.60
Smokeless screenings.....	Columbus.....	1.55	2.20	2.90	3.00@3.50
Smokeless lump.....	Chicago.....	2.30	2.90	2.90	2.50@3.00
Smokeless mine run.....	Chicago.....	1.80	2.25	2.70	2.50@3.00
Smokeless mine run.....	Cincinnati.....	2.65	2.90	3.25	3.25@3.75
Smokeless mine run.....	Cincinnati.....	2.00	2.60	2.90	3.00@3.50
Smokeless screenings.....	Cincinnati.....	1.90	2.40	2.75	2.75@3.50
*Smokeless mine run.....	Boston.....	4.80	5.65	6.75	7.15@7.50
Clearfield mine run.....	Boston.....	2.70	3.15	3.25	3.50@4.00
Cambria mine run.....	Boston.....	3.25	3.50	3.75	4.00@4.50
Somerset mine run.....	Boston.....	2.70	3.40	3.50	3.75@4.50
Pool I (Navy Standard).....	New York.....	3.65	3.75		
Pool I (Navy Standard).....	Philadelphia.....	3.45	3.75	3.95	4.50@5.00
Pool I (Navy Standard).....	Baltimore.....	3.75	3.90	4.00	
Pool 9 (Super. Low Vol.).....	New York.....	3.25	3.50	4.00	
Pool 9 (Super. Low Vol.).....	Philadelphia.....	3.05	3.40	3.75	4.25@5.00
Pool 9 (Super. Low Vol.).....	Baltimore.....	3.25	3.40	4.00	4.50@5.00
Pool 10 (H. Gr. Low Vol.).....	New York.....	3.00	3.25	3.75	4.75@5.00
Pool 10 (H. Gr. Low Vol.).....	Philadelphia.....	2.90	3.20	3.60	4.50@5.00
Pool 10 (H. Gr. Low Vol.).....	Baltimore.....	2.95	3.25	3.75	4.50@5.00
Pool 11 (Low Vol.).....	New York.....	2.75	3.00	3.65	4.50@4.75
Pool 11 (Low Vol.).....	Philadelphia.....	2.70	2.85		
Pool 11 (Low Vol.).....	Baltimore.....	2.85	3.20	3.50	4.50@5.00
High-Volatile, Eastern	Market Quoted	Apr. 24, 1922	May 8, 1922	May 15, 1922	May 22, 1922†
Pool 54-64 (Gas and St.).....	New York.....	2.50	2.70		
Pool 54-64 (Gas and St.).....	Philadelphia.....		2.65		3.00@3.75
Pool 54-64 (Gas and St.).....	Baltimore.....		3.00		3.75@4.25
Kanawha lump.....	Columbus.....	2.45	3.15	3.15	3.40@3.75
Kanawha mine run.....	Columbus.....	2.15	2.65	3.00	3.00@3.50
Kanawha screenings.....	Columbus.....	1.70	2.20	2.95	3.00@3.35
W. Va. Splint lump.....	Cincinnati.....	2.65	2.50	3.10	3.25@3.50
W. Va. Gas lump.....	Cincinnati.....	2.40	2.90	3.00	3.50@3.75
W. Va. mine run.....	Cincinnati.....	1.95	2.70	3.00	3.25@3.50
W. Va. screenings.....	Cincinnati.....	1.90	2.50	2.90	3.00@3.50
Hooking lump.....	Columbus.....	2.65	3.15	3.15	3.75@4.00
Hooking mine run.....	Columbus.....	2.15	2.90	2.90	3.50@3.75
Hooking screenings.....	Columbus.....	1.75	2.25	2.85	3.25@3.75
Pitts. No. 8 lump.....	Cleveland.....	3.40	3.25	3.25	3.75@4.00
Midwest	Market Quoted	Apr. 24, 1922	May 8, 1922	May 15, 1922	May 22, 1922†
Pitts. No. 8 mine run.....	Cleveland.....	\$2.55	\$3.00	\$3.25	\$3.75@4.00
Pitts. No. 8 screenings.....	Cleveland.....	2.55	3.00	3.25	3.75@4.00
Franklin, Ill. lump.....	Chicago.....	3.45	3.45	3.95	
Franklin, Ill. mine run.....	Chicago.....	2.75	3.00	4.15	
Franklin, Ill. screenings.....	Chicago.....	2.75	3.00	4.15	
Central, Ill. lump.....	Chicago.....	2.65	2.75		
Central, Ill. mine run.....	Chicago.....	2.65	2.75		
Central, Ill. screenings.....	Chicago.....	1.85	2.00		
Ind. 4th Vein lump.....	Chicago.....	3.15	3.15		
Ind. 4th Vein mine run.....	Chicago.....	2.50	2.50		
Ind. 4th Vein screenings.....	Chicago.....	2.25	2.25		
Ind. 5th Vein lump.....	Chicago.....	2.60	2.60		
Ind. 5th Vein mine run.....	Chicago.....	2.40	2.40		
Ind. 5th Vein screenings.....	Chicago.....	2.60	2.60		
West. Ky. lump.....	Louisville.....	2.20	2.90	3.15	3.00@3.50
West. Ky. mine run.....	Louisville.....	2.00	2.65	3.15	3.00@3.50
West. Ky. screenings.....	Louisville.....	2.25	2.65	3.15	3.00@3.50
West Ky. lump.....	Chicago.....				3.60
West Ky. mine run.....	Chicago.....				3.60
South and Southwest	Market Quoted	Apr. 24, 1922	May 8, 1922	May 15, 1922	May 22, 1922†
Big Seam lump.....	Birmingham.....	2.00	2.00	2.00	1.95@2.10
Big Seam mine run.....	Birmingham.....	1.70	1.70	1.70	1.50@1.90
Big Seam (washed).....	Birmingham.....	1.85	2.15	1.95	1.75@2.00
S. E. Ky. lump.....	Chicago.....				3.50@3.75
S. E. Ky. mine run.....	Chicago.....				3.50
S. E. Ky. lump.....	Louisville.....	2.40	2.90	3.15	3.75@4.00
S. E. Ky. mine run.....	Louisville.....	2.40	2.80	3.00	3.25@3.50
S. E. Ky. screenings.....	Louisville.....	1.70	2.60	3.00	3.25@3.50
S. E. Ky. mine run.....	Cincinnati.....	2.40	2.60	3.00	3.25@3.75
S. E. Ky. mine run.....	Cincinnati.....	2.00	2.60	3.00	3.25@3.75
S. E. Ky. screenings.....	Cincinnati.....	1.65	2.50	3.00	3.00@3.50
Kansas lump.....	Kansas City.....	4.25	4.25	4.25	4.00@4.50
Kansas mine run.....	Kansas City.....	4.00	4.15	4.15	4.00@4.30
Kansas screenings.....	Kansas City.....	2.50	2.65	2.65	2.50@2.75

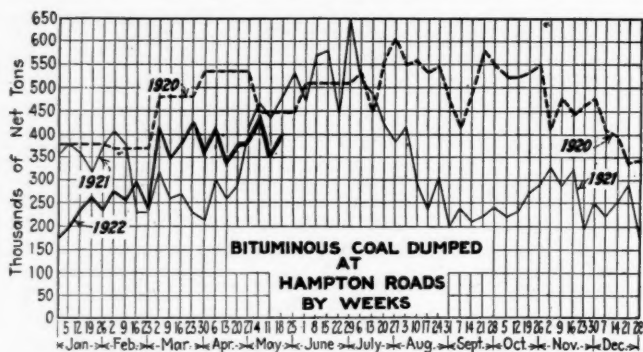
*Gross tons, f.o.b. vessel, Hampton Roads.

†Advances over previous week shown in heavy type, declines in italics.

NOTE—Smokeless prices now include New River and Pocahontas.

Lake Michigan points and are shipping to more distant points than have heretofore drawn on them. This unusual distribution has brought a larger volume of inquiries.

The Minnesota State Railroad and Warehouse Commission has had a representative at Duluth investigating the shipping of coal to out-of-territory points in general and to



Lower Lake ports by boat in particular. The report made to the commission stated that docks at Duluth were not making unfair price concessions in order to ship this outside coal, and that the commission had no authority to interfere with the shipment of coal down the Lakes.

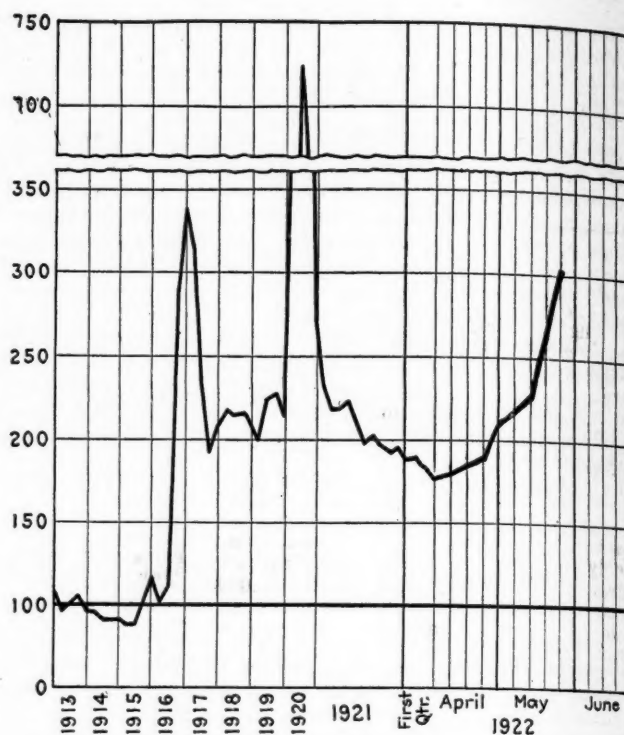
COKE

Beehive coke production was 96,000 net tons during the week ended May 13, the second consecutive week during which the output has increased since the strike began. The increase occurred chiefly in the Connellsville region.

The coke market remains inactive as to tonnage offering, however. Where an occasional blast furnace must have coke the price quoted is very high. Connellsville coal has dropped \$1, due to the effect on buyers of the Washington price conference.

ANTHRACITE

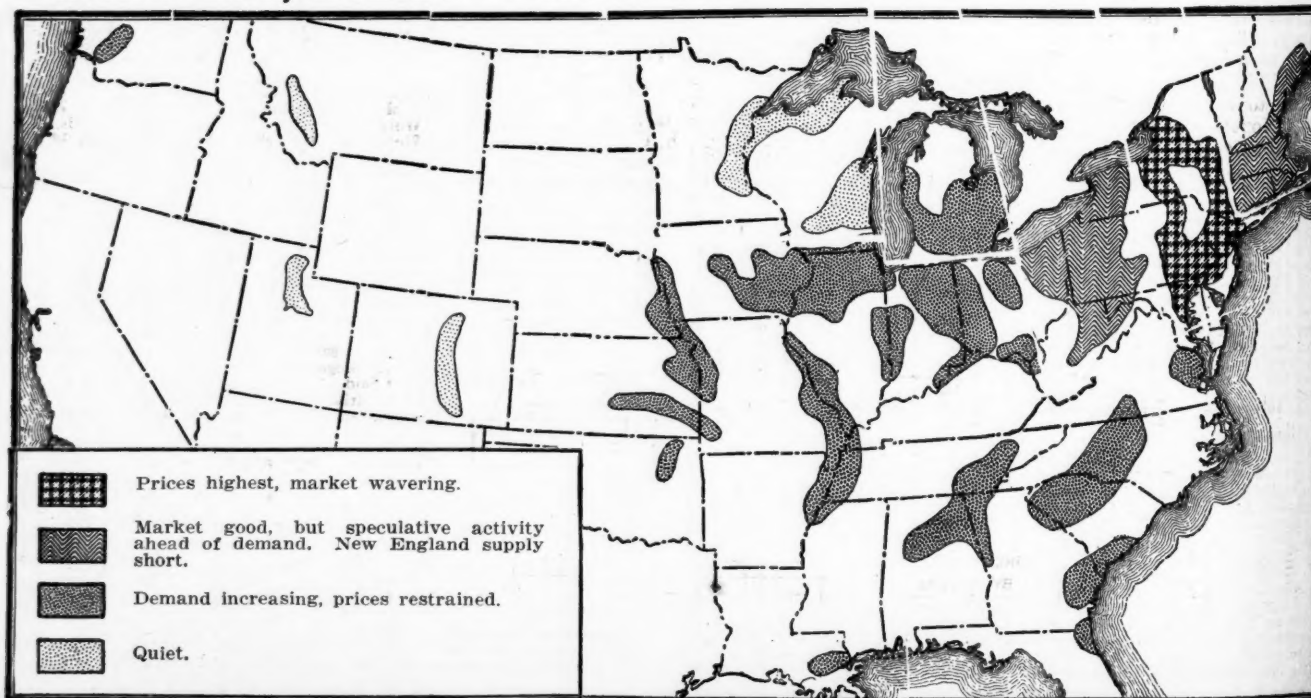
The situation is unchanged in the anthracite region. The total output during the week ended May 13 did not exceed 7,000 tons, being limited to steam sizes dredged from the rivers. Storage tonnage of domestic sizes has about been cleaned up with the exception of pea coal, which continues sluggish. Steam sizes are scarce except buckwheat No. 1, which is moving better because of the advancing bituminous prices.



Coal Age Index 303, Week of May 22, 1922. Average spot price for same period \$3.67. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Indiana and Illinois prices not included in figures for last week.)

Retail business is almost at the vanishing point. Some of the small orders now being placed are traceable to the strike, but the majority of the consumers feel that future price reductions are certain and are gambling on their ability to fill their needs after mining is resumed. Retail stocks will last well into the summer at the present rate of distribution.

Relative Activity of Markets for Bituminous Coal at End of Seventh Week of Strike



Foreign Market And Export News

British Production Declines; Export Market Prices Are Weaker

PRODUCTION of coal in Great Britain declined to 4,765,000 gross tons during the week ended May 6, according to a cable to *Coal Age*. The previous week's output, the high point of the year, was 5,160,000 tons. Prices showed a softening tendency during last week.

The trade in Northumberland and Durham is not quite so active. Inquiries are coming in but movements have been somewhat erratic and the general tendency is apparently in the direction of a general toning down in values. The only two orders worth reporting are from the Aarhus gasworks for 90,000 tons of best Durham gas coal, and from the Amsterdam gasworks for 100,000 tons of Durham gas coals.

There is no change in the Scottish trade. While a few enquiries are coming from Italy and France, the home industrial demand is very poor.

Wales reports a slight decline in prices. This is no doubt due to the uncertainty of the home industries, on account of the engineering trades dispute, and also to the fact that supply is overtaking demand. The export branch of the business is not quite so uncertain.

Welsh miners' wages for May are still at the minimum of 28 per cent above the 1915 standard. March audits revealed that the industry could afford 16.76 above the standard, so that to make the wages up to the minimum the owners must sacrifice a further £171,371. Up to the end of March they have given up £1,309,000 in five months.

Business continues to be favorable in the north of England. The Swedish Marine has taken 7,500 tons of steam coals at 31s. 3d. and 31s. 5d. Inquiries include 2,000 tons of special gas coals for the Aalborg gas works and 15,000 tons of steam coals for the Latvian Railways for shipment during June and July. The Danish State Railways are in the market for 100,000 tons best screened steam coal for shipment from May to December. Other inquiries in the North of England aggregate 100,000 tons of unscreened coking coals.

British March Exports Are Heavy

Exports of coal from the United Kingdom during March showed an increase of 1,200,000 tons, or nearly 30

per cent, over the February exports, according to *Commerce Reports*. Coal supplied to ships engaged in foreign trade also increased about 10 per cent.

The principal increases appear in the coal shipped to Italy, the Netherlands, and Germany. Belgium, the Scandinavian countries, and others also received increased amounts, while shipments to Russia, Chile, and Brazil declined.

UNITED KINGDOM EXPORTS OF COAL

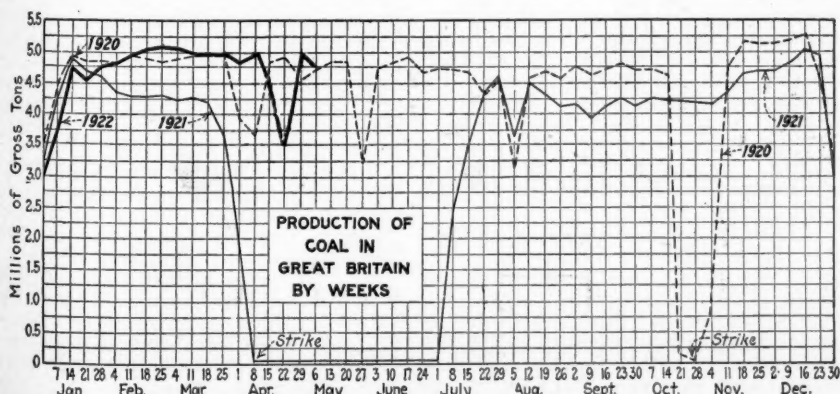
Exports to	March, 1921	February, 1922	March, 1922
		Gross Tons	
Russia.....		17,546	8,502
Sweden.....	78,853	122,272	149,306
Norway.....	44,587	144,252	179,455
Denmark.....	148,599	165,598	211,578
Germany.....	67,732	359,889	467,718
Netherlands.....	113,713	336,725	597,248
Belgium.....	10,938	239,027	310,187
France.....	437,659	1,206,442	1,237,815
Spain.....	127,642	152,429	151,874
Italy.....	332,480	319,349	681,110
Greece.....	37,083	16,061	50,293
Chile.....	179	9,526	2,891
Brazil.....	6,097	72,318	64,381
Uruguay.....	31,972	35,378	31,653
Argentina.....	98,520	128,252	132,065
Egypt.....	66,857	134,036	159,380
Other countries..	365,167	555,234	765,779
Total.....	1,968,078	4,014,334	5,201,235
Bunkers.....	1,056,005	1,409,007	1,543,519

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended May 6 was 1,561,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 1,911,000 tons.

ITALY—The price of Cardiff steam first is quoted on the Genoa market at 39s. 9d., according to a cable to *Coal Age*. Last week's price was 41s. 3d.

SPAIN—Production of coal during 1921 was 4,718,838 metric tons, as compared with 4,928,989 in 1920. The bulk of the coal was produced in the Province of Oviedo. Lignite output was 408,684 in 1921 as against 552,425 tons the previous year. Anthracite output totaled 292,591 tons in 1921 as compared with 491,715 tons in 1920. The output in the Province of Palencia showed a large increase, while both Cordova and Leon output fell. There were 969,393 tons of coal imported during the year, as compared with 332,362 tons in 1920; coke imports were 110,645 tons against 37,133 tons.



Trade Booms at Hampton Roads

Increased activity at all piers featured the week at Hampton Roads, while all prices took a leap upward, high-volatile reaching the highest point for eighteen months. The demand for coal was good throughout the week, with prospects considered good for a continuation of brisk trade.

Export business fell off, but movements to New York and New England were on the upgrade, with bunkers holding their own. Supplies at port were slightly depleted, but sufficient for current demands. Only in the high-volatile coal at Newport News was there any serious depletion of stock.

Hampton Roads Pier Situation

	—Week Ended— May 11	May 18
N. & W. Piers, Lamberts Point		
Cars on hand.....	1,367	1,506
Tons on hand.....	73,444	81,382
Tons dumped.....	166,089	177,348
Tonnage waiting.....	10,000	20,000
Virginian Ry. Piers, Sewalls Point		
Cars on hand.....	1,084	929
Tons on hand.....	54,200	46,450
Tons dumped.....	90,558	118,764
Tonnage waiting.....	31,650	20,442
C. & O. Piers, Newport News		
Cars on hand.....	602	793
Tons on hand.....	30,100	39,650
Tons dumped.....	50,882	61,706
Tonnage waiting.....	8,300	9,200

Export Clearances, Week Ended, May 18, 1922.

FROM HAMPTON ROADS:		Tons
For Atlantic Islands:		
Am. Schr. James E. Newson, for Fort de France.....		1,035
For Brazil:		
Am. S.S. Robin Hood, for Reo de Janeiro.....		8,437
For Cuba:		
Nor. S.S. H. K. Waage, for Havana.....		3,015
For Italy:		
Br. S.S. Vestalia, for Portoferraio.....		8,085

Pier and Bunker Prices, Gross Tons

PIERS		May 13	May 20†
Pool 9, New York....	\$8.00@8.50	\$8.00@8.50	\$8.00
Pool 10, New York....	8.00@8.25	8.00@8.25	8.00
Pool 9, Philadelphia....	6.55@7.00	7.15@7.50	7.15
Pool 10, Philadelphia....	6.40@6.75	6.95@7.45	6.95
Pool 71, Philadelphia....	6.90@7.30	7.45@7.70	7.45
Pool 1, Hamp. Rds....	6.50@7.00	7.00@7.25	7.00
Pools 5-6-7 Hamp. Rds	6.50@7.00	7.00@7.25	7.00
Pool 2, Hamp. Rds....	6.00@6.50	6.75@7.00	6.75

BUNKERS		May 13	May 20†
Pool 9, New York....	\$7.50@7.75	\$8.20@8.50	\$8.20
Pool 10, New York....	7.25@7.50	8.25	8.25
Pool 9, Philadelphia....	6.85@7.30	7.40@7.65	7.40
Pool 10, Philadelphia....	6.80@7.00	7.25@7.55	7.25
Pool 1, Hamp. Rds....	7.00@7.25	7.25	7.25
Pool 2, Hamp. Rds....	6.40@7.00	7.00	7.00
Welsh, Gibraltar.....	43s. f.o.b.	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro....	55s. f.o.b.	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon.....	43s. f.o.b.	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata.....	50s. f.o.b.	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa.....	43s. t.i.b.	43s. t.i.b.	43s. t.i.b.
Welsh, Messina.....	41s. f.o.b.	41s. f.o.b.	41s. f.o.b.
Welsh, Algiers.....	41s. f.o.b.	41s. f.o.b.	41s. f.o.b.
Welsh, Pernambuco....	62s. 6d. f.o.b.	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia.....	62s. 6d. f.o.b.	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira.....	42s. 6d. f.a.s.	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Tenerife.....	40s. 6d. f.a.s.	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Malta.....	44s. 6d. f.o.b.	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas....	40s. 6d. f.a.s.	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Naples.....	38s. f.o.b.	38s. f.o.b.	38s. f.o.b.
Welsh, Rosario.....	52s. 6d. f.o.b.	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore....	57s. 6d. f.o.b.	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Port Said.....	46s. 6d. f.o.b.	51s. 6d. f.o.b.	51s. 6d. f.o.b.
Alexandria.....	44s.	43s.	43s.
Capetown.....	35s. 3d.	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b.

Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff :	May 13	May 20†
Admiralty, Large.....	28s. 6d. @ 29s.	28s. 6d. @ 28s. 9d.
Steam, Smalls.....	19s. @ 20s.	19s. @ 20s.
Newcastle:		
Best Steams.....	23s. 6d. @ 24s.	23s.
Best Gas.....	23s. @ 24s.	23s. @ 24s.
Best Bunkers.....	22s. 6d.	22s. 6d.

† Advances over previous week shown in heavy type; declines in italics.

Chicago and Midwest

Coal Industry in West Tries to Steady Market

New Effort to Keep Prices Reasonable And Distribution Even Is Based On Operators' Pledges—Western Kentucky Prices First to Weaken.

A NEW and determined effort to end the skyrocket prices in the Midwest region, if not for the whole country, is developing around the recently organized railroad buying pool which is now getting into its stride. The better element in the Western coal industry is doing its level best to make the industry handle its own present problems in so creditable a way that the Government will have no occasion to step into the coal struggle now going on. The plan, as it is now beginning to work out, not only will provide enough coal for the railroads all summer long at a reasonable price, but will care for public utilities and other essential coal consumers while planting a heavy heel on the sort of speculation which blows the lid off the price pot.

The railroads' new fuel committee at Chicago will supervise the buying of coal not only for all lines west of Ohio but will take care of other big consumers, unless some hitch in the plan appears. This centralizing of buying is expected to be extended into the East with sufficient inclusiveness to have a decided effect upon the whole market. By securing fair price agreements with coal producers and by keeping a large share of the country's buying down to that level, it is confidently hoped that for once the country will not suffer at the hands of speculators. In the Chicago market, at least, a certain restraint upon speculation is exerted by a daily check upon the number of cars of coal in the yards on open consignment and the publication of that total. This daily information, when watched by buyers, may prevent a good deal of panickiness.

Thus far the plan has worked with good effect in the Midwest. Nobody can look into the future, but, filled though the plan is with possibilities for failure, and balky as some railroads are about taking part, yet interested observers are convinced it is going to have a wholesome effect on the coal industry generally at a time when such influences are to be desired.

The Kentucky fields continue to be filled with buyers and operators there are talking about \$5 coal by the middle of June in spite of the solemn prophecy from Chicago that reckless bidding is about over and next week will see a slight deflation of prices and a general steadying of the market. Domestic and

country trade has gone for the summer, it appears. Industrial demand in certain quarters is improving steadily.

LOUISVILLE

Reports from various sections of the fields show that many mines that have been down have resumed operations. Some of the wagon mines are now getting started, it is said. Loading records are being shattered, and tonnage is far above any previous peak level of production. Mines are not having to sell coal today, it being more a question of accepting the best bids. With the jobbers of Louisville it is a question of finding enough coal to supply orders.

Jobbers and operators are getting plenty of inquiries. There are numerous buyers in the fields. Price levels are advancing, and expected to go still higher as reserve stocks of industries and utilities are beginning to feel the long strike strain.

ST. LOUIS

Domestic buying is at a standstill and retail steam demand is easy. A hasty survey of the storage yards in St. Louis shows that there is between 60,000 and 80,000 tons of screened coal in storage. Screenings may total over 10,000 tons. Owners are beginning to unload this storage as carload steam at about \$5 on cars at St. Louis for domestic and \$4@4.50 for steam. Indications are that the domestic user will not buy this coal so it releases it for steam and incidentally is the weapon used against western Kentucky high-priced coal, which temporarily is out of this market at its present price of \$3.50 and up. Some of this coal is coming in at the prices of a month ago, when it was bought. But large tonnage purchased a month ago at low prices has not been shipped. This has caused some trouble.

CHICAGO

By all odds the biggest thing in the Chicago market during the past week has been the new effort to hold prices in line by agreement in the trade and by other methods. The results of this effort have been obvious in several quarters. In the first place a good deal of western Kentucky and Eastern coal, brought into this market evidently for speculation, got into trouble during the last three days of the week and were unloaded without profit. On Friday night a total of 309 cars were in a similar fix and the loose flow in this direction, which had set in for the second time this month, appeared to be checked, for the market is evidently not going to absorb coal at a price much if any above \$3.

This new local influence plus the fact that the trade the country over, seems to be awaiting developments of the recent Hoover fair price conference with non-union operators is expected to have a decided settling effect upon the trade in this section during the week which began the 22d. The tendency of

western Kentucky to attain \$4-heights by the 22d seemed, at the end of last week, to have vanished. A good deal of coal from that field sold here at \$3.60@3.70 all week long and a little touched \$3.80, but a sharp slump the first of this week presaged an early end of the purely "spec" market here.

Very little coal other than that from various Kentucky fields sold here during the past week. A trickle of smokeless, mostly for regular customers, has been coming in continually, but the first of this week saw a 75c. decline in the spot smokeless market.

SOUTHERN ILLINOIS

No disturbance has so far marked the suspension period in the southern Illinois fields. Several unmarried mine workers leave the mining sections daily for industrial centers. In Franklin County there is some loading of small screenings that have been on the ground for many months. Some railroad coal is still held at mines but the commercial coal is gone. The last prices quoted were \$4@4.25 for domestic sizes and up to \$3.50 for screenings.

There is still a little commercial coal in cars in the Standard field and a few cars at Mt. Olive. This is for the most part being held for speculation. There are several thousand tons of steam and screened coal on the ground at mines in this district that are being held at \$4.50.

A few thousand tons of Springfield district steam sold in St. Louis recently at a price understood to be better than \$4 on cars at mine, loaded from storage.

INDIANAPOLIS

The market for coal throughout the Indianapolis region is reported to be on the mend. A slow improvement in industrial conditions is having its effect. Buying is not reckless, however, in spite of the tendency to grow flighty over the entrance of the railroads into the market for large tonnages from western Kentucky, a field which has been sending coal here steadily.

Coal has become so plentiful on the Pennsylvania that at Ft. Wayne, it has ceased loading coal from the huge pile in the yards there. For some time the company has been drawing on its reserves to tide over any possible shortage. Recently, officials say, a sufficient supply of coal has been available without using reserves.

WESTERN KENTUCKY

Demand for coal is steadily increasing as industrial and rail stocks are reduced. Buyers are flocking into the fields, including industrial consumers, brokers and operators from Indiana and Illinois who are endeavoring to secure coal to supply their regular customers.

It was reported from Madisonville, that over fifty coal buyers were there in search of coal at one time.

Prices are advancing steadily, the level of \$3.50@3.75 being quoted this week by the operators, who are only booking short-run business, and who are indifferent to the take-it-or-leave-it point. They can always load it out and wait for business and be fairly certain of getting a better price. The Chicago market, which has been purely speculative, slumped sharply, however, at the beginning of this week.

Anthracite

Steam Market More Active As Bituminous Prices Stiffen

**Householders Relying on Price Drop,
Play Waiting Game—Retailers Still
Have Good Domestic Stocks—Storage
Tonnage Except Pea, Cleaned Up—
Lake Trade Dormant.**

CONSUMER buying has almost disappeared. Some of the small orders still being placed are traceable to the strike but the majority of the householders feel that price reductions are sure to come and are gambling on their ability to fill their needs later on. Retailers still have stocks of all domestic sizes on hand, which may last well into the summer. Storage tonnage has about been cleaned up, with the exception of pea coal and this is not moving well.

Stiffer bituminous prices have brought about a more active steam market, although buckwheat is the only size available.

PHILADELPHIA

Retail trade has almost reached the vanishing point, and with some of the smaller yards the receipt of an order is almost an event. However, it is still believed that the larger proportion of buying that does develop is traceable to the strike, as we have had dealers report that people in very moderate circumstances have frequently of late ordered a ton or two to have something in store should the next coal burning season arrive without the miners at work.

The yards nearer the center of the city seem to have the most coal. Farther out toward the suburbs less coal is apparent. There is still an offering of nut from storage at \$8.40 @ \$8.60, and there is also again a little storage egg coal, for which \$9 has been asked recently. Pea is still very plentiful at \$6.

With payment for coal shipments made from the mines in March due now, the shippers are exerting greater efforts to get the money in, and there are more reports of slow accounts than for years. There is no question that dealers' payments are held back by the slowness of their trade to meet their obligations.

Buckwheat moves somewhat better in the steam trade. Rice has been about cleaned up and some of the latest shipments went out at \$2.75, an advance of 25c.

NEW YORK

There is little activity in the wholesale market and the same applies with equal force to the retail situation. Stocks have dwindled rapidly and the market is practically clear of domestic sizes, except for pea coal.

With the present conditions remaining unchanged it is possible that some retail dealers will have sufficient coal to carry them until June 1. Some retail concerns are circularizing their customers advising them to place orders for next winter's coal, to be delivered when work is resumed in the mines, current prices at time of delivery to prevail.

Retail dealers as a rule are able to fill orders for any of the larger sizes but their supply of stove had been heavily drawn upon and will soon disappear. Pea coal which is now in storage continues to slumber. Nobody seems to want it and the demand is quiet.

The steam coals are getting scarcer. Demand for buckwheat suddenly picked up due it is felt, to the advanced quotations for bituminous coals. Rice and barley are harder to obtain. Quotations for buckwheat ranged \$3.35 @ \$3.75; rice, \$2.50 @ \$3 and barley \$2 @ \$2.25.

BOSTON

The market for domestic sizes is now at about a standstill. One or two large producers have chestnut still in storage and one company is understood to have a small tonnage of egg, but aside from these two temporary sources of supply there is practically nothing available above the size of pea. Independents are still circularizing this section, but the number of cars now coming forward is very small.

Retail shows little improvement except in a few communities where there is developing a mild demand for season's supply. Should this spread it would not take long to move the reserve now in dealers' hands.

Certain of the originating companies are meeting with fair success in moving stock pea. They anticipate an upward demand for this size before June has progressed very far.

BALTIMORE

Except for the fact that there is practically no demand the present situation of reserves would be serious. Only a few of the dealers now have as much as 500 tons in hand, some have no coal at all, and the average for about thirty of the largest dealers is not over 150 tons. Baltimore burns normally as spread over the year about 60,000 tons per month, and the probabilities are that the present reserve at all yards is not over 10,000 tons.

BUFFALO

The movement is at its smallest. With scarcely any demand, there is next to no coal on hand. Consumers as a rule have coal left over from the winter and are not disturbed over the strike. If it ends soon enough to meet the winter's needs that is all that people think about.

There is a little chestnut to be had and the steam sizes are long enough. Shippers wonder that users of the regular fuel sizes do not put in the

small coal in moderate quantity, for with a little furnace coal they can be made to answer all ordinary purposes and at prices \$4 or so off.

Independent operators are still selling a little coal, getting a small premium for it, but they will have none soon, as they were usually not able to put as much into store as the line companies did. Jobbers find only a small demand for this coal.

Coke

CONNELLSVILLE

Furnace coke is quoted \$6.25 @ \$6.50, against \$6.50 flat a week ago. Offerings are very light, while there is only occasional demand from a blast furnace. Sales are small, and chiefly to miscellaneous consumers. Foundry coke remains quotable at \$6.75, with offerings approximately equal to demand. In the region as a whole coke production is at about 40 per cent of the March rate, but coal production shows a relatively greater decline.

The policy of the Connellsville operators is unchanged, to let the strikes run as long as they will. As to being a part of the general strike, which the strikers think they are, they occupy a very poor strategic position, since even if the union operators were disposed to negotiate there would be no means of inducing Connellsville operators to participate, while no demands upon the Connellsville operators have been made by the strikers.

The *Courier* reports production during the week ended May 13, at 40,400 tons by the furnace ovens, and 13,750 tons by the merchant ovens, a total of 54,150 tons, an increase of 1,950 tons.

UNIONTOWN

The Connellsville strike is now waning. Production has not only resumed at many of the mines first affected, but a great many wagon mines, operated only in times of market activity, have started up and many miners ordinarily employed at the larger operations have secured employment at those mines. The union organizers have disappeared from the public view. They may yet be in the region but have refrained from holding public meetings for a week.

The Monongahela River district, which for six weeks was one of the organizers' strongholds, has finally commenced to crack and several larger mines are now operating, with indications that several other plants could be operating if the owners so desired.

The coal market is an up and down affair. It is now \$3.25 @ \$3.50, having softened \$1 because of the effect of the Washington conference on buyers. All command the same price with but very little byproduct in demand. The coke market is inactive as to tonnage but strong as to price.

BUFFALO

The coking companies in Pennsylvania are so short that the local byproduct ovens are obliged to supply the coke here. The coal that comes in by Lake from West Virginia is very suitable for making coke. Quotations remain at \$7 for best 72-hr. Connellsville foundry, \$6 for 48-hr. furnace and \$4.50 for stock.

North Atlantic

Buyers Are More Cautious; Bidding Less in Evidence

Some Large Buyers Off Market After Washington Conference with Non-Union Producers — Prices Barely Firm—Southern Coal Flowing In—Smaller Consumers About to Appear.

THE Washington conference with non-union producers has caused a more cautious buying policy. There is less bidding for the tonnage that is offering and some large buyers have withdrawn from the market. Quotations are barely firm but there are fewer takers. As the accumulation of cars at the New York piers has grown there is a tendency to shop around before placing an order.

Southern coals continue to flow in heavily. At Philadelphia there are many inquiries for freight rates from distant and unfamiliar points, indicating a growing urgency to buy. So far the larger buyers constitute most of the market activity, but signs are not lacking that the smaller consumers are about to enter the market.

CENTRAL PENNSYLVANIA

Production is on the increase. The output for the week ended May 13, was 2,831 cars, as compared with 2,437 the week previous. Mines on the South Fork branch more than doubled their output.

The situation over the district, is quiet, only small and widely scattered disturbances being reported. Both sides are confident of winning out.

Miners in some sections of the field, largely in northern Cambria County and in Somerset, are growing restless as a result of the enforced idleness. A meeting was held last week during which the miners demanded to know what has been done with the money they have been paying into the union and why they are receiving no strike benefits. The result is that the U.M.W. leaders are holding very few meetings.

NEW YORK

Whether as a result of the Washington conference or because of the lack of demand, the market was easier toward the end of last week. Quotations seemed to be firm, although it was said that many sales had been made at lower figures.

There was about 40 per cent more coal at the local piers on May 19 than on the corresponding day of the previous week, much of this being on consignment. The habit of some buyers bidding against each other in order to obtain coal has been heard of but the instances are scarce.

Southern coals are coming forward

in good tonnages, most of it being under contract. Some offers of English Admiralty grade coals have been received here on a basis of from \$6.85@ \$7 c.i.f. New York. It is not thought at this time that any of it will be brought to this port.

Those consumers who must have coal are not particular as to the quality, but they are painstaking as to the price and will not pay any more than they must without canvassing the offices thoroughly. Reserve piles are being slowly eaten into and it is only a question of a short time before large consumers will be looking for coal.

It was reported that a small lot of Pool 14 at Port Reading had been offered at a price of \$8 f.o.b.

BALTIMORE

Prices reached a peak on May 18, and then dropped a bit. During the high-water mark even moderate grades were readily commanding \$4.75@ \$5, and bunker coals were selling around \$8 gross. At this writing coal of any kind is worth \$4@ \$4.50 f.o.b. mines. There is practically no high-grade steam coal on the market.

The larger industries are still fairly well supplied, although some are now beginning to buy more extensively to prevent depreciation. The railroads and large public service corporations state that they have enough to carry them over for a considerable period.

The halt to the upward price movement was apparently due to the psychological effect of the conference in Washington called in an effort to prevent a runaway price market for soft coal. As stocks are low and demand is on the increase the best posted coal men here would not be surprised if the coming week would again see price conditions on the jump. It must be remembered that the conference in Washington was attended by only some fifteen operators, who could not control the greater part of the coal field. It is understood here that a meeting has been called for the National Coal Association membership and that it will take at least two weeks to formulate a plan to carry back to Mr. Hoover for approval.

PHILADELPHIA

It would seem that the continued improvement in the iron trade has so stiffened the demand that large consumers among the utilities are coming out and trying to get a larger portion of the production. It did not take long for \$5 coal to be reached, most undesirable as it is from all standpoints.

There is no question that production has increased, but unfortunately it is far below the proportion of increased consumption and for this reason reserves are fast being reduced. So far the smaller consumer continues to hold aloof of the market, but it is certainly only a matter of a very few weeks before he is smoked out into the open and will have to bid for the available fuel along with the other consumers. More southern coal is reaching the city, not only by boat, but by rail, and

with a freight rate around \$5. As showing the trend, the rate departments of the railroads are handling a large number of inquiries for rates from distant points which rarely, if ever, originated coal for this market.

A majority of the houses simply refuse to quote prices. They continue to advise consumers not to buy unless absolutely necessary, and in that case offer to procure coal at the best possible price, plus a reasonable brokerage.

FAIRMONT

Steady production gains are being made in the face of a strike. The increase is noticeable on the Charleston Division of the B. & O., the Monongah Division of the same road and on the Morgantown & Kingwood. There were 123 mines in operation during the week ended May 13. Mine run ranges around \$4.

UPPER POTOMAC

Substantial gains are being made in the Upper Potomac, loadings now amounting to about 15,000 tons a day. Approximately half the mines in this district are now running. Prices are strong. Little change is to be observed in conditions in the Georges Creek region, where most of the mines are still in idleness.

South

BIRMINGHAM

Alabama mines are gradually being benefited as a result of the strike, but the volume of business so far has been somewhat disappointing, and has not been sufficient to stimulate either production or the market to any great extent. Most of the coal bought has been for shipment through the Memphis gateway for use west of the river, for railroad fuel. Quotations in considerable number have been requested by industrial users in foreign territory, but no great amount of business has developed so far. There has been no noticeable increase in the demand from local territory.

Things are likewise dull as regards domestic fuel. Mines are having some trouble in placing the output under present restricted operation. Dealers are stocking rather slowly. Quotations are as follows:

	Mine Run	Domestic
Carbon Hill.....	\$2.00@ \$2.25	\$2.20@ \$2.45
Cahaba.....	1.85@ 2.25	2.95@ 3.45
Black Creek.....	2.00@ 2.40	2.75@ 2.95
Crown.....	1.80@ 2.00	2.45@ 2.70
Pratt.....	1.75@ 2.00

Production has been on a basis of about 275,000 tons per week for some time but indications are that the output will show some increase.

VIRGINIA

Production is being maintained at more than 80 per cent of capacity in the region as a whole. With the demand on the increase and prices climbing upward many of the smaller mines are resuming operation. Producers are marketing a large industrial tonnage in Eastern and Southern markets. There is little or no market for lump, however, except that which is being shipped on a contract basis.

Northwest

Upper Lake Ports Fret Over Outgo of Stocks

They Wonder Whether Their Safety Supplies Will Hold Out—Demand Light in Their Normal Territory—Cargoes Slow Coming In.

A QUICKENING in demand for coal has been felt during the past few days at the Upper Lake docks, indicating the effect of the strange tendency to ship coal down the Lakes instead of only Inland. This has set up a fretting among some Northwest interests for fear the dock stocks will not meet the Northwest's needs, but others say there is still plenty and this unloading may be a fine thing, for it will leave less high-priced coal on hand at the end of the strike when a price drop is anticipated. Business and industry in general throughout the region has not improved much. Upbound cargoes by Lake are few. Prices have not increased.

MINNEAPOLIS

Coal selling seems to be getting harder and harder, despite the support which the strike ought to give to the market. Dock run coal has been quoted as low as \$5.25 f.o.b. dock and up to \$5.50 but it has not resulted in any material gain in business. No amount of price cutting develops any business. It only makes trouble.

The general commercial situation seems to be slowly improving. There is no hope for anything more than a gradual return, and this means that the demand for fuel will be equally gradual. The feeling of buyers of coal generally is that there is bound to be a substantial reduction in prices, and they propose to wait. They may be disappointed although on steam coal, prices have already gone down sharply. Retail orders for anthracite are being solicited here on old prices, guaranteed until September 1.

A shipment of pig iron from Sheffield, Ala., by water to Metropolis, Ill., destined for a stove foundry at Shakopee, Minn., saved \$4 a ton over the rail rate. The through rate from Sheffield to Shakopee is \$9.62. If the shipment could have been sent all the way to St. Paul or Minneapolis by barge, leaving only a 20-mile rail haul, the saving would have been considerably more. This is being used as an argument for the development of river transportation, and coal from the Illinois and Kentucky fields always enters into any serious consideration of it.

DULUTH

A most noticeable increase in inquiries has been remarked at Duluth-Superior docks within the last three days from both inside and outside this territory. Security from shortage here,

which seemed assured by heavy stocks on hand when the strike started, is endangered, and it seems probable that a real rush of buying will take place within a week or two.

Reports from railroad companies show that for the last two or three days, 1,500 tons daily have gone out from Head-of-the-Lake docks to points outside of the territory. Probably the amount of coal shipped consumers within the territory is about the same.

The real propelling motive behind the quickening of trade is published reports of shipments of coal from this harbor to Lake Michigan ports. Five boats have already been chartered to carry coal to near-mine points, as was reported two weeks ago, and numerous inquiries have been received for more cargo shipments. It is commonly understood that the coal will go to Lake Michigan rather than Lake Erie ports.

Madison, Wis., usually outside Duluth territory, has been a heavy buyer in local markets. One public utility there is reported to have made sure of an adequate supply of coal.

Market in bituminous is stiffening perceptibly. The price is still \$6.50 for

lump and \$6 for run of pile, but any shading has disappeared. It seems certain that prices will take a 50c. advance before a week has passed, which will make them at the level of a month ago.

MILWAUKEE

There is no demand at the present time, except from large users whose requirements have to be met regardless of market conditions. Domestic users are not buying and delivery systems are at a standstill. Dealers say there is a pent-up feeling of nervousness in the industrial world, and that things are liable to break loose in the coal market in the course of the next few weeks; however, there are no signs of anxiety just now.

Coal cargoes are coming in very slowly. The carferries are shunting considerable anthracite and soft coal over the rails to the interior country. Little coal is coming by rail because of the lack of demand. No changes have been made in the price list of either soft or hard coal since the drop of 50c. per ton noted in the last report.

Thus far this season only two cargoes of anthracite have reached port, and one of these consisted of only 700 tons. Soft coal cargoes number 26. Receipts of hard coal to date aggregate 8,000 tons, against 169,688 tons during the same period last year. Soft coal receipts total 189,909 tons, against 438,512 tons in 1921.

New England

Lively Competition at Roads Boosts New England Prices

Demand Slacker Since Washington Fair-Price Conference—With Stocks Heavy and Prices High, Consumers Await Developments—Tidewater Coal Further Invades All-Rail Territory.

COMPETITIVE buying continues at the Roads and this has increased prices at this end. The Washington fair-price negotiations have slackened the demand in New England. Stocks are heavy enough to enable consumers to await any developments that may possibly reduce the present high prices.

The current receipts are being reduced by the heavy Western and New York calls on Hampton Roads coals and rehandlers at this end are becoming extremely cautious about commitments. Pennsylvania fuels are little in evidence and only at very high prices. All-rail receipts have been dwindling since the strike began and Tidewater coal has been increasing the area of its distribution in this territory.

Buyers in the West and in New York continue their competitive buying at Hampton Roads. Sales at \$7.35 per

gross ton at the piers have been credibly reported. The trade here is much interested in negotiations at Washington looking to a "fair price" and the news thus far given out has for the moment slackened spot demand in this territory.

Other than for spot shipment the smokeless agencies are reluctant to name prices. There is beginning to be more or less delay in loading at the terminals and this is likely to increase as the market broadens along the line and in the West. Factors here look for still higher prices next week and as it looks at this writing that prospect will be realized. In any case, there is an apparent shortening of supply for this section. Those who have contracts find their shippers somewhat more rigid as to monthly quotas and some of those who rehandle for Inland distribution are much more guarded about commitments.

Non-union coal from the different Pennsylvania sections is now very little in evidence. Receipts all-rail are dwindling fast and here and there there is an inquiry for Tidewater coal to be shipped well into the narrow zone which because of high through-rates is restricted to the all-rail route.

For Inland distribution, there is a much quieter demand than was the case a fortnight ago. Buyers are marking time for the present and while quotations have been made as high as \$8.25 on cars Boston there have really been very few sales at any high figure. Practically all of what tonnage is being absorbed in this way is drawn from rehandling plants rather than direct from cargoes.

Eastern Inland

Sellers Bull Coal Market, Taking All Traffic Will Bear

Hoover Parley Checks Connellsville Coal Prices—Speculative Coal Exceeds Current Demand—Diversified Demand Presages Active Market, Industrial Stocks Gradually Shrinking.

SPECULATIVE activity still outdistances current demand. Prices are being marked up almost daily. While the call is strengthening the fact that coal on consignment occasionally lingers on track and is sold under pressure to avoid demurrage is proof that sellers are taking all the traffic will bear and bulling the market. The Washington fair-price conference has reduced the prices for Connellsville coal.

There is a more diversified demand, which presages an active market, as industrial stocks are gradually being lowered. In Cleveland, however, the majority of industries buy power from the Cleveland Electric Illuminating Co., which is fully protected.

PITTSBURGH

There has been dynamiting at three wagon mines in the immediate Pittsburgh district, doing but little damage. The regular railroad river mines, being union, are all closed and there is no incident in this respect in connection with the strike.

Westmoreland gas and Connellsville steam were in the market, both at a general range of \$4@4.25. Offerings were perhaps increased a trifle, the advance in prices being attributed to heavier buying. Connellsville coal prices broke \$1 early this week as a result of the government plan of inspection of coal orders by regional committees through voluntary action of some operators.

Large quantities of West Virginia coal are now coming into the Pittsburgh district. The steel industry has been buying coal very freely in non-union districts, in some cases making rather long-term contracts, but still has large stocks. The theory appears to be that when the strike does end coal will not be plentiful by any means. The balance of probability seems to be, however, that while the Connellsville strikes still look strong they will end some time before the union strike really comes to a head.

CLEVELAND

The undercurrent of sentiment among non-union operators is adverse to the price restraint plan outlined by Secretary Hoover. They are opposed to any act unless minimum prices are also provided which would insure against losses. In the meantime the coal market is tightening and stocks are getting precariously low. In con-

nection with railroad demand it is significant that the roads have not found it necessary to confiscate any fuel as yet. In each case they are finding the owner of cars and arranging for the price before taking possession.

Steel mill operations are not being hampered, although the addition of new capacity is not being made as freely as might have been the case were coal supplies adequate. Industrial plants are beginning to feel the pinch in many cases. Considerable Kentucky and West Virginia coal is coming into Cleveland at prices around \$3.75.

Up to date 1,500,000 tons of coal have been loaded at lower ports, half going up and half down the Lakes. Non-union coal is moving to the Lower Lakes quite satisfactorily.

Receipts of bituminous coal at Cleveland during the week ended May 13 amounted to 1,049 cars of which 817 cars were for industries and 232 cars for retail yards. This quantity is estimated to be about 70 per cent of normal requirements.

DETROIT

About the only indications of improvement are found in a stronger demand from the steel companies and an increase on the part of some railroads. Little inquiry for steam coal is coming from the industrial and manufacturing plants. Many of these establishments are credited with possession of substantial reserves, which are not being reduced very rapidly.

A number of steam users are avoiding purchases at this time in the expectation that by waiting they will be able to purchase at a lower cost. In refutation of this contention jobbers point out that stocks are now being reduced more rapidly than they are renewed and that there will be little or no reserve later in the year when the buyers begin flocking into the market.

Domestic demand has virtually ceased and the retail dealers are taking no additional supply. Instead, they are worrying over a possible loss on present stocks, if lower freight rates materialize.

Pocahontas in all sizes is quoted at about \$3 at the mines. West Virginia and Kentucky lump is \$3.50, mine run, \$3.25, nut, pea and slack, \$3.25.

EASTERN OHIO

During recent strike weeks the demand has principally been from large users such as railroads and steel plants for the purpose of making additions to their stock piles. In the past ten days the smaller consumers have been entering the market, not only for reserve fuel, but in some cases to supply current requirements.

Notwithstanding this increased activity the quantity available continues ample for all needs, evidenced by the fact that open consignments arriving in the larger industrial centers have not been readily absorbed, in some instances demurrage charges accruing.

Stripping mines continue to produce weekly a quantity estimated at between 30,000 and 40,000 tons although some interference with employees by union miners has been experienced.

Prices continue firm with a tendency to stiffen. Stripping coal is quoted as follows: Slack, nut-slack and mine run, \$3.75@4.25; these same grades from non-union mines in West Virginia and eastern Kentucky are \$3.75@3.85. There are very few, if any, cases of urgent need for coal throughout this section because the current supplies, coupled with reserve stocks, prove sufficient.

In the Lake trade additional tonnage has been lined up to move from Ohio ports, principally Toledo and Sandusky to Buffalo, but shipments to the Upper Lake docks are very light. Last week, the docks dumped 260,000 tons of cargo coal as compared with 755,000 tons during the same week last year.

COLUMBUS

Demand is increasing and with it comes higher prices. It is feared by some that the upward trend has only started and that extreme high levels will prevail for some time to come. Some of the larger producers and shippers have taken a firm stand against advanced prices in excess of \$4 but it is doubtful if anything can be done to stop it if the consumers become insistent.

Reserve stocks are being reduced gradually and this is causing users to replenish them. Iron and steel concerns along the Ohio River section are buying practically all of the surplus coming out of West Virginia and Kentucky.

With rapidly advancing prices the wholesaler is doing a good business. Lake shippers are looking around for supplies. Contract prices have not been settled as yet.

BUFFALO

The price of coal goes up slowly, but steadily. Some jobbers still advise their customers not to buy, unless they are short, but many of them say they will pay more if they wait.

Locally the trade is about as unsatisfactory as possible. Jobbers say it is about useless to sell any coal, even after it is bought, for a great part of the operators will sell it again for a slight advance offered and then it may be impossible to find any more at the same price. This sort of bad faith will be remembered when the business becomes normal again. All sorts of prices are paid. A fair quotation is \$4.25@4.75 for Pittsburgh and No. 8 lump and \$4@4.25 for mine run and slack. Youghiogheny gas coal has disappeared.

Soft coal is coming in from Ohio ports, mainly Toledo, at an unprecedented rate, the amount for last week being 113,160 net tons. It is moved at a rate said to be less than \$3 from the West Virginia mines to the Buffalo furnaces, and as it was bought before coal began to go up, is a good proposition.

NORTHERN PANHANDLE

Production is not far from normal and nearly all mines are in operation. The union has been extremely active in Marshall and Brooke counties and in one instance it has become necessary to obtain an injunction to prevent interference with the miners desiring to work. Steel manufacturers and railroads are in the market and much of the output is being utilized for railroad fuel.

Cincinnati Gateway

Hoover Warning Has Slight Tendency to Check Advance

Scramble Forces Price 25c. Above West's Offering Figure—Tidewater Demand Boosts Logan Prices—West Virginia Leads Kentucky Coal in Market—Smokeless Business Tremendous.

PPRICE advances featured the coal market last week. Without enough coal to go around, a scramble for tonnage ensued which raised prices 25c. a ton over what the West was offering. The effect of Hoover's warning so far has been a slight diminution of buying orders early this week, which has had a checking tendency on the advancing prices.

Tidewater demand boosted the Logan prices last week. West Virginia led Kentucky coals on the market. Smokeless business has risen to a terrific volume and any available tonnage was quickly taken by the speculative element in the trade.

HIGH-VOLATILE FIELDS

KANAWHA

There are fully twice as many mines now in operation as at the time the strike became effective. Demand has reached a point where it is outstripping the supply, at least as to mine run and slack.

LOGAN AND THACKER

Because of a heavy call Logan mines have been forced to exert themselves to keep up with the heavy demand coming from steel interests, railroads and some of the utilities, coupled with a growing demand at the Lakes. Some large contracts are being placed but shipments are being made as a rule on a monthly basis, owing to changing prices. Little lump is being shipped as the demand is not heavy.

Thacker production is on a higher level than at any time in recent years, ranging from 145,000 to 150,000 tons a week. The steel people and the railroads are securing large tonnages. The demand in the West for Williamson coal is steadily increasing. The union is making no headway in shutting off production in this region, which is still under martial law.

NORTHEASTERN KENTUCKY

Although losses in Northeastern Kentucky are being sustained by reason of the strike, they are slight, not amounting to more than 7 per cent of full time. Production is between 60 and 70 per cent of capacity. Steel concerns have been and are heavy buyers but other industries are also represented in the market and as a result of the increased demand prices on mine run have risen strongly. Little other than mine run is being produced or shipped.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Conditions are being rapidly restored to normal in the New River region, owing to the large number of men who are breaking away from the union and returning to work. Miners are not securing much aid from the union and hence are abandoning their strike despite the effort of leaders to hold them in line.

There is a heavy demand for smokeless both in Eastern and Western markets and at Tidewater with prices on a higher level.

The strike is no longer making any inroads on the Gulf output and with most of the mines operating production is averaging 27,000 tons a day. A large part of this is finding its way to Tidewater and to Inland East markets.

POCAHONTAS AND TUG RIVER

With large steel concerns seeking contracts and with the spot demand reaching larger proportions, it is possible for Pocahontas operators to produce a record-breaking output. Tidewater demand is reaching larger proportions and more coal is being exported to South America and the West Indies. Some fuel is also going into Philadelphia and New York markets, several large contracts covering delivery for a month or more having been closed.

All mines in the Tug River region are working and are speeding up production to take care of the increased demand, with the weekly output averaging about 110,000 tons. The greater part of this output is flowing to Western markets, with the steel industry securing large tonnages. Other industries, however, are coming into the market, and that is stimulating the demand and hardening prices, especially on mine run. No strike losses are being sustained.

SOUTHEASTERN KENTUCKY

Car shortage is interfering very materially with production. Last week the mines worked only three days. Demand continues good with prices a little higher. Orders are becoming more scattered every day, indicating that stocks are getting low with other industries than steel companies.

The labor situation continues to improve. A lot of colored labor is coming in from Alabama, where an over supply of miners exists.

Persistent rumors of the sale to Ford interests of the Creech properties have been authoritatively denied.

CINCINNATI

The result of the excessive demand was a raise in price last week. There was a range of \$3.50@4 for any size of high-volatile, whether it were steam, byproduct or gas. The increasing tonnage from Kanawha and New River as well as Winding Gulf is said to have been snapped up for movement to the East.

Southeastern Kentucky kept trailing the market as it was set in West Vir-

ginia. The Elkhorn taking a lower freight rate to the steel mills points, could be expected to lead the van.

Smokeless business has risen to a terrific volume and any or all extra coal that can be mined is being snapped up. Eastern shipments again have the center of the stage. Most of this coal is being bought for shipment to Philadelphia, Boston and Baltimore. Larger companies are well sold up and the figures quoted are from speculators, jobbers and others who take advantage of every rise in the market. Hoover's warning had little effect here, most of the jobbers arguing that the law of supply and demand would have to work its own way out.

Retail business was practically unchanged from the figures quoted last week. One or two firms that were insecure in their supply of Pocahontas raised the price to \$8 for lump but the others failed to follow suit. Deliveries are at the lowest ebb of any time this year.

West

SALT LAKE CITY

The strike has had no effect so far on industrial plants in Utah nor has it inconvenienced the domestic consumer. The plants are carrying large reserves and the small consumers are not buying.

New prices at the mines are as follows: Lump, \$4.50; domestic lump, \$4; stove, \$3.75; nut, \$3.50. Utah mine run, \$3; slack, \$1.25. This is a reduction of about 50c. a ton all round and was made possible by the lower wage scale. There is very little demand for slack. Lump is selling best. A further reduction may be made in the not distant future, as there is a possibility of lower freight rates.

KANSAS CITY

There is some improvement in the demand for both steam and domestic coal and the retail yards are beginning to clean up what they had in stock so that they will be able to start in the fall with a clean yard. Domestic grades held at the mines are moving out and are being used both for domestic and steam purposes so that in a very short time there will be very little local coal to offer.

There is no change in the labor controversy and neither side has made any move toward settling the strike. Prices have not advanced.

DENVER

A joint hearing between the Colorado State Public Utilities Commission and the Interstate Commerce Commission in session here three days regarding readjustment of freight rates in the Western states was concluded May 13. A similar hearing opened at Salt Lake City May 15. Meetings of this sort will be held by the Interstate Commerce Commission in most of the Western states.

No change in strike conditions throughout the state is noticeable. A lack of demand along with unrevised freight rates both contribute to a slow market. Deductions in coal prices either wholesale or retail are not likely, according to many operators.

News Items From Field and Trade

ALABAMA

The coal terminals constructed by the Government on Blakely Island, Mobile, to be used in connection with the Warrior barge line into the coal fields of Walker County, have been completed. These terminals were built at a cost of \$400,000 and provide storage bins for export and bunker coal, equipment being provided for the rapid unloading of cars into the bins or directly into vessels. These improvements are expected to greatly increase the movement of Alabama coal through the port of Mobile.

The School of Mines of the College of Engineering of the University of Alabama offers five fellowships in mining and metallurgical research in co-operation with the U. S. Bureau of Mines. The fellowships are open to graduates of universities and engineering schools who have proper qualifications to undertake research investigation. The value of each fellowship is \$540 per year of nine months, beginning Sept. 1. Fellowship holders will be required to register as graduate students and to become candidates for the degree of master of science unless an equivalent degree has previously been received. Applications are due not later than July 15 and should be addressed to H. D. Pallister, Professor of Mining Engineering, School of Mines, University of Alabama, University, Alabama.

COLORADO

The meeting of the Colorado & New Mexico Coal Operators' Association, in Denver, June 21, will be mainly to take up the freight rate problem in the two states, according to F. O. Sandstrom, secretary. Members attending the convention will be composed entirely of committees on transportation matters. Reduction in the prices of coal will depend on lower freight rates as present charges are considered out of line with other parts of the country.

CONNECTICUT

The Mill River Coal Co., New Haven, has filed a preliminary certificate of dissolution with the Secretary of the State of Connecticut. Claims against the company should be sent to William G. Lindopp, 152 Temple St., New Haven.

The Hartford Coal Co., Hartford, has recently added \$190,000 to its capital stock, and filed a certificate with the State Secretary's office for an issue of 1,900 shares at \$100 par value.

The Greenwich Coal Co., Inc., Greenwich, has filed papers of incorporation, to engage in the wholesale and retail coal and coke business, and will operate a yard in Greenwich. The capital stock of the concern is \$50,000.

The Berkshire Mill Coal Co., Bridgeport, recently filed papers of incorporation to engage in the coal business. The company will have a capital stock of \$100,000, and will commence business with \$60,000. The incorporators are James A. Barri, Jonathan Grout and William B. Boardman, Bridgeport.

ILLINOIS

Elkville, a small town in Elk township of Jackson County is to have at least one more large mine if not two, in the near future. Drilling of test holes has been under operation for several months and it is announced that the company which has the tracts optioned is ready to begin sinking as soon as the present strike is ended. The name of the company has been withheld for some reasons not announced, but it is said the same concern operates several mines near Zeigler and other Franklin County coal mines. The site where the new mine is to be sunk, is five miles southeast of the large Kathleen Mine at Dowell, and eleven miles west of the Zeigler coal field.

W. S. Burris, general superintendent of the Jewel Coal & Mining Co.'s two mines at DuQuoin, was in Chicago recently on business at the offices of the Sterling-Midland Coal Co.

The prostrating of Colonel Quin Morton, the veteran Paint Creek operator and his removal to St. Luke's Hospital in Chicago was a shock to his many friends. Mr. Morton has been stricken with paralysis in his right leg. His company, the Wood-Morton Fuel Co., was recently consolidated with the Ft. Dearborn Coal Co., and later developments required the attention and time of Mr. Morton in Chicago, where he fell a victim to his over-activities.

Eugene V. McAuliffe, of St. Louis, president of the Union Colliery Co., of that city, was in Dowell recently.

C. A. Chapman, Inc., announces the twenty-second anniversary of Chapman Service as industrial and power engineers, also the opening of its new plant in the Madison Terminal Bldg., South Clinton St., Chicago.

The Old Salem Coal Mine Co., Petersburg, has been incorporated to mine coal. The incorporators are Perry Altig, Walter S. Miller and John Jurgens, all of Petersburg.

Albert J. Nason, president of the Illinois Coal & Coke Co., recently announced that his company had completed final plans for the sinking of the large mine in Elk Prairie township, near Mt. Vernon, Jefferson County. The company plans to construct a railroad from Mt. Vernon southwest near the site of the future mine and the name of the road will be the Jefferson & Southwestern R.R.

A. S. Austin, Sr., of Milwaukee, was in southern Illinois recently attending to business relative to the closing of the No. 2 mine of the Kanawha Fuel Co., at Du Quoin, of which company he is president. The mine has not been operated for over a year and practically all of the machinery, equipment, etc., around the plant has been sold.

INDIANA

The Howe Coulter Coal Co., of Chicago, has bought of the Pike County Coal Co., of Indiana, all the coal property the company owns in Pike County, including the Atlas Mine and the Simplex Mine of Petersburg, together with 1,000 acres of coal land in that vicinity and 5,000 acres in Logan township, Pike County, where two 10,000-ton mines will be sunk as soon as the New York Central completes its trunk line that has been surveyed from Petersburg to Oatsville and to Francisco where the railroad company owns some mine property.

IOWA

The Kansas & Iowa Coal Co. has unearthed a strip mine along the right-of-way of the Wabash in Red Rock township. A small steam shovel has been at work for several days and one of much larger build and greater capacity has just been unloaded.

KENTUCKY

George J. Allen, formerly with the Dixie Fuel Co., at Nashville, Tenn., who for some time past has been operating the Allen Coal Co., a jobbing concern at Nashville, has come to Louisville, with the Dixie Fuel Co. branch.

With a capital of \$30,000, the McAuliffe Coal Co., Louisville, has been chartered by Lucile Harlan, Frank B. McAuliffe and Tim B. McAuliffe. The debt limit is \$100,000.

The Kentucky & West Virginia Power Co., a \$6,000,000 corporation supplying ninety per cent of the mining companies in Hazard, has purchased the W. C. Daniel light plant in Whitesburg and will at once extend the lines supplying several coal companies and possibly a tower or two. It is also planned to continue transmission lines on through the main Elkhorn coal fields.

The Elkhorn Block Coal Co., operating in the Upper Big Sandy territory has increased its capital from \$25,000 to \$125,000. This is to be expended on modern improvements which will enable it to double the production within the year.

MASSACHUSETTS

William T. Bennett, formerly associated with Alley & Page, Boston, has recently resigned his position and will enter the coal business at Boston.

Daniel P. Haskins, coal dealer, Chicopee, has let the contract for the construction of a \$30,000 concrete and frame coal pocket and bunker at his coal yards.

Robert M. Grant of Boston, president of the New England Fuel & Transportation Co., returned to his headquarters at Boston recently after looking over the properties of the company in northern West Virginia.

NEW YORK

The Supreme Court, Brooklyn, has ordered four stockholders of the old Columbus & Hocking Valley Coal & Iron Co. to reply to the separate defenses entered by the reorganization committee and voting trustees of the concern whom they have sued for an accounting. The complaining stockholders allege that they with other stockholders, ten years ago, raised \$700,000 to rehabilitate the company. It is charged that the defendants created subsidiary companies and elected as officers and directors men who were not stockholders in the Columbus & Hocking Valley company. These officers and directors are alleged to have squandered the money raised to rehabilitate the concern. The defendants deny the charges and state that the stockholders surrendered their certificates to the Hocking Valley Products Co. The reorganization committee accounted to the directors of the products company, they state, and the account was approved and the committee discharged.

OHIO

The Renner-Kline Coal Co., Bolivar, has been incorporated with a capital of \$50,000 to mine coal in the Tuscarawas field. Incorporators are John M. Renner, Byron R. Barder, John C. Frank, Herbert Sheidler and Frank E. Ream.

The Big Mountain Coal Co., Columbus, has been chartered with a capital of \$10,000 to sell coal. Incorporators are D. H. Armstrong, E. W. Lighthizer, E. H. Hanna, M. R. Wiltner and C. W. Culp.

The Trent-Mueller Fuel Co., Cincinnati, has been incorporated with an authorized capital of \$30,000 to deal in coal, both at wholesale and retail. Incorporators are P. Trent, L. J. Mueller, William F. Hopkins, K. S. Morrison and Clifford Brown.

The Deaker Corporation offices have been removed to the Federal Oil & Gas Bldg., Akron.

The Baltimore & Ohio is planning to abandon its coal docks at Sandusky.

The Wallins Creek Coal Co., of Louisville, has opened a branch office in Cincinnati in the Dixie Terminal Bldg., with Alex Vowels, formerly with the Wyoming Coal Sales Co. in charge as sales manager and T. L. Bennett as assistant.

PENNSYLVANIA

There was little change in the strike situation in the Connellsville coke region during the past week, except that the Calumet plant of the H. C. Frick Coke Co., in Westmoreland County, resumed operations in full. No additional plants were affected during the week nor were any gains made by the strikers at any mines in the region.

At the new Warwick Mine of the Diamond Coal & Coke Co., near Masontown, a barn was completely demolished by dynamite thought to have been stolen from the magazine of the Frederickstown Coal & Coke Co.

Isaac J. Jenkins has been elected a vice-president of the Bertha Coal Co., Pittsburgh, succeeding Captain Frank A. Gould, who recently resigned to become general manager of the Lent Traffic Co., of Pittsburgh.

Appeals from the 1922 triennial assessment of coal holdings in Somerset County have been filed at Somerset by these coal companies: Quemahoning Creek Coal Co., Listie Coal Co., Wilmore Coal Co., Quemahoning Coal Co., D. B. Zimmerman, Pennmont Coal Co., and the Somerset Coal Co. The petitioners set forth that the assessments were not made by the assessors but by the county engineers. They all ask the county commissioners, sitting as a board of revision, to review the assessments and make such changes as are right and proper.

L. H. Conklin, president, and C. R. Bedford, secretary, of the **Von Storch Collieries Co.**, operating the Von Storch mine, in North Scranton, have disposed of their holdings in the concern to **Meeker & Co.**, a New York firm, which has for some time been acting as coal sales agent for the company. At the same time officials of both companies denied rumors to the effect that the **Temple Coal Co.**, of which F. H. Hemelright is president, was preparing to take over the Von Storch operation.

The **Addison Coal Co.**, Johnstown, capital \$100,000, has been incorporated. Treasurer, Morris Berney, Johnstown. Purpose, mining and dealing in coal and coke. Incorporators: Tobias J. Callett, Harry Silverstone and Morris Berney, Johnstown.

The **Home Fire Fuel Co.**, Garrett, has been formed with \$40,000 capital. Treasurer, C. D. Fritz, Garrett. Purpose, mining, operating, shipping and selling coal. Incorporators: M. J. Romesberg, Garrett; Isaac Weinstein, Meyersdale and William H. Fritz, Garrett.

Recent changes in the amounts of capital stock recorded at the State Department at Harrisburg are as follows: **Ninevah Coal Co.**, indebtedness increased \$300,000; J. R. Eisaman, treasurer, Westmoreland County; **Monarch Fuel Co.**, indebtedness increased to \$1,250,000; J. L. Kemmerer, treasurer, Allegheny County; **Consumers Fuel Co.**, debt limit increased to \$200,000; John H. Jones, president, Allegheny County; **Stratford Coal Mining Co.**, capital, \$5,000 to \$98,000; William J. Schaffer, treasurer, Philadelphia.

The **Pennsylvania Coal & Coke Corporation** reports net income of \$809,259 for 1921 after depreciation and amortization. Other items in the report are operating income of \$5,908,670; total income, \$6,037,778; balance after deductions, \$989,168. The total production during the year amounted to 1,580,250 net tons.

VIRGINIA

The **Clinchfield Coal Corporation**, of Dante, has contracted with Roberts & Schaefer Co., for additional conveying machinery to be installed at the No. 3 tipple at Dante.

A new map of Virginia, showing the location of the power stations and transmission lines used in public service and the names of the public utility companies, has just been published by the United States Geological Survey, Department of the Interior.

WASHINGTON

The College of Mines of the University of Washington offers five fellowships for research in mining, metallurgy, and ceramics in co-operative work with the Bureau of Mines. The fellowships are open to graduates of universities and technical schools who are properly qualified to undertake research investigations. The value of each fellowship is \$780 per year, beginning July 1. Fellowship holders are required to register as graduate students and to become candidates for the degree of master of science in mining engineering, or metallurgy, or ceramics, unless an equivalent degree has previously been earned. Applications are due not later than June 10, and should be addressed to the Dean, College of Mines, Seattle, Washington.

Notwithstanding that the large part of the coal mines of the country are closed down on strike, the market for coal is not sufficient to absorb the full production of the Pacific Coast Coal Co., and it has become necessary to reduce temporarily the production at Newcastle and Issaquah mines.

WEST VIRGINIA

The **Baltimore & Ohio** has started to make some extensive improvements in northern West Virginia. A three-mile stretch between Grafton and Clarksburg will be double-tracked, thus giving a freer movement to coal.

Fairmont people have launched the **Behler Coal Co.** with a capitalization of \$50,000. Fairmont is to be the general headquarters. Active in effecting a preliminary organization of this company were: H. Shain, M. A. Joliff, S. J. Snyder, Seymour McIntire and Clay D. Amos, of Fairmont.

The circuit court of Kanawha County, which directed a verdict of \$64,000 against the **Lake & Export Coal Corporation**, of Huntington, in the suit for damages of the

Fayette-Kanawha Coal Co., for \$150,000 for breach of contract, has been reversed by the West Virginia Supreme Court and the case sent back for another trial. The output of two mines near Montgomery was involved. The plaintiff alleged that more coal could have been produced at these mines. The appeal court held that the actual capacity of the mines at the time the contract was negotiated was what should determine the capacity of the mines.

There were 25 fatalities in West Virginia mines in April, 16 of which were the result of falling roof, coal and slate. Mine car accidents were responsible for the death of three, motors for the death of three more, mining machines for the death of two and one miner was killed outside the mines by a railroad engine.

Authority has been granted for the sale of the Ruffner Mine in Logan County to William Roeggie, in the case of **A. D. Cronin** against the **Hinchman Creek Coal Co.** C. W. Freeman, special receiver, has completed the sale of the property previously owned by the Hinchman company and has been directed to pay certain debts including a bill of \$3,449.84 due the sheriff of Logan County and the Auditor of West Virginia for taxes.

The **Buffalo-Eagle Colliery Co.**, operating at Braeholm on Buffalo Creek in the Logan field has only recently completed the construction of a modern club house for the accommodation of its employees and the traveling public. This is a three-story structure, with walls of tile, the exterior being of stucco. In the basement there is a laundry. Shower baths and tubs have also been provided in the basement.

The **Glogora Coal Co.**, of Huntington, has awarded to the Fairmont Mining Machinery Co., a contract for what is said to be the largest rope and button conveyor system in the world, to be used at the mine at Stickney, Raleigh County. The conveyor is to be 2,800 ft. long and is to be in two sections. Coal will be handled from the top of a hill and dumped into the second conveyor from which point the fuel will be carried to the tipple. Cost of the new equipment will be \$60,000.

Having completed the installation of a siding and driven openings, the firm of **Talbot & McHale** has begun production at its new mine near Philippi. Edward McHale, who was one of the organizers, recently sold his interest to Brown Talbot and Donald Talbot. Offices of the company are at Philippi.

A case was argued before Judge W. S. Meredith of the Marion County Circuit Court early in May involving the ownership of coal lands in Mannington District of Marion County, valued at from \$200,000 to \$250,000. The case is styled the **Whyel Coal Co. vs. the Flat Run Gas Coal Co.**, and others. The Whyel company brought a suit to enforce an alleged contract of sale by the Flat Run company to the Whyel company of a large area of coal in the Pittsburgh vein. The Flat Run company has refused to convey the acreage of coal, and therefore the plaintiff is seeking to have the court enter an order compelling the defendant to convey the acreage of coal to the Whyel company.

After a year or more of preparation the **Nelson Fuel Co.**, whose property is reached by the Greenbrier & Eastern, in the newly developed Greenbrier field, has started the mining and shipment of coal on a large scale. This company is headed by John B. Laing of Lewisburg. Other companies at Quinwood and at other points on the Greenbrier & Eastern are also producing smokeless. With such mines in operation, the Sewell Valley R.R., a switch-back road connecting the Greenbrier & Eastern with the Chesapeake & Ohio, is handling more than 100 loads of coal a day.

For the third time within recent years, a destructive fire has wrought heavy damage at Holden, operating headquarters of the **Island Creek Coal Co.**, one of the largest producing companies in West Virginia. The electrical room and machine shop of this company were destroyed by fire a few days ago, the loss being between \$60,000 and \$75,000. The cause of the fire has not been determined. A few years ago the company lost a large tipple through fire and about three years ago the store and office building were destroyed. Plans and specifications have been prepared for a new machine shop and electrical shop.

WISCONSIN

Percy Braman, president of the Braman Fuel Co., Milwaukee, who has been serving as Commissioner of Public Works of that city for the past seven or eight years, has retired from office and will devote his entire attention to the coal business in future.

The wooden anthracite shed of the **Callaway Fuel Co.**, which is one of the old landmarks of the upper Milwaukee River coal district, is being razed to give way to a modern steel structure.

The **North-Western Fuel Co.**, is making extensive repairs and improvements to its dock yards at Washburn. About 300,000 tons of coal are handled by the company annually.

BRITISH COLUMBIA

The re-opening of the workings of the **Carbondale Coal Co.** is contemplated. This property is near the City of Cranbrook and some of its citizens are interested. It is estimated that \$25,000 would be required to assure early production.

In giving evidence before the Knowles Conciliation Board, at Fernie, W. R. Wilson, president of the **Crow's Nest Pass Coal Co.**, the biggest operating concern in District 18, U. M. W. A., stated that on the actual investment of \$6,200,000 the average dividend paid by his company between 1910 and 1921 was 2.46 per cent; the average dividend prior to 1910 had been 2 per cent. The average daily wage paid to contract miners in 1921 was \$9.13, an increase of 125.5 per cent compared with 1910; the average paid to day work miners was \$7.75, an increase of 152.5 per cent. A general reduction in operating expenses must be made, if Crow's Nest field expects to remain in the competitive Manitoba market.

Recent developments in connection with the coal mining industry of Vancouver Island are encouraging. New deposits of coal have been opened up in the Reserve Mine, **Western Fuel Corporation of Canada**, and in the Farm Mine, Comox, **Canadian Collieries (D) Ltd.** The collieries have been working steadily and the output is being well maintained. It is not anticipated that the mines of the Island will be affected by the strike as the wages are still being regulated by the Dominion fair wage officers.

WASHINGTON, D. C.

M. R. Campbell, of the U. S. Geological Survey, is studying the geology and physiography of that part of the Shenandoah Valley in which the newly discovered caverns are located.

W. C. Alden is in Montana to continue his studies of the tertiary and pleistocene bench gravels and glacial phenomena in the plains of eastern Montana and western North Dakota.

A party in charge of **R. H. Sargent** is en route to Alaska to make topographic and geologic surveys in the Cold Bay oil region. Mr. Sargent will be assisted in the topographic work by **R. K. Lynt**. The geologic work will be done by **A. A. Baker** and **W. R. Smith**.

R. T. Price has been endorsed by the Oklahoma Coal Operators' Association to succeed himself as a director of the National Coal Association. **Walter Barnum** has been elected by the Washington Coal Producers Association as its representative on the National Association's directorate. **S. L. Yerkes** has been similarly designated by the Alabama Fuel Association.

The House Committee on Mines and Mining has decided to adhere to its former action in reporting to the House for passage the bill to acquire land now leased by the **Government Fuel Yards** of the Bureau of Mines in the District of Columbia. Retail coal interests had urged the committee to reconsider its action on the ground that the retail coal trade of the District should enjoy the Government business and that the operation of the fuel yard was more expensive than by private industry.

Traffic News

The **Norfolk & Western Railway Co.** has applied for authority to issue \$6,700,000 in securities to purchase four thousand 70-ton all steel hopper coal cars.

Construction work will commence at once on the Castleton Bridge and "cut-off" improvement of the **New York Central Railroad**, under plans providing for rapid work on a scale that will bring it into operation within two years. This work calls for an ultimate expenditure of approximately \$20,000,000. The new bridge will be located about twelve miles south of Albany.

The Southern Railway System has just completed and opened a double-track bridge over the Ohio River at Cincinnati, which should aid it materially in handling its coal traffic through that city. Work of rebuilding started in July of last year, and the bridge was opened the second week of May.

In the complaint of the Manufacturers' Association of Connecticut an I. C. C. examiner recommends that rates on bituminous coal from certain Long Island Sound ports in Connecticut and Rhode Island to inland Connecticut destinations during Federal control were unreasonable.

In the complaint of the Little Fork Coal Co., an examiner recommends that claim for refund on shipments during Federal control are barred by the statute of limitations. Refund is denied for want of proof on shipments of bituminous coal shipped subsequent to Federal control from Willard, Ky., to Cincinnati, points in the Cincinnati switching district and points in central freight association territory.

The Utah Supreme Court has affirmed the award of the District Court which allowed the **Jeremy Fuel & Grain Co.**, Salt Lake City, \$58,962.80 in the suit against the Denver & Rio Grande Western Railway, claimed to be due for overcharges on coal shipments from points in Carbon County to Salt Lake City and a charge of \$1.60 per ton was demanded and paid. Other coal companies were interested in the suit.

The I. C. C. has suspended until Aug. 17 proposed reductions ranging from 20c. to 74c. per ton on bituminous coal from mines in Arkansas, Missouri, Oklahoma and Kansas to Omaha, Nebr.

The **Central Iron & Coal Co.**, of Holt, Ala., has complained to the I. C. C. against unreasonable rates on coal from Liberty Mine, Ala., to Kellerman, Ala.

The **L'Angeville River Ry. Co.**, has requested the I. C. C. to hold that rates on lump coal from Kentucky mines on the Illinois Central and the L. & N. to Marianna, Ark., are unreasonable. The commission is asked to reduce the rates from \$3.54 to \$2.57.

The complaint of the **Perry County Coal Corporation** has been assigned for argument before the commission in Washington June 21, and that of the **Willard Coal Co.**, June 23.

Argument will be heard by the I. C. C. June 8 in the case involving routing of coal from **Western Maryland Ry. Mines** to Eastern destinations; and on June 15 the complaint of the **Omaha Lumber & Coal Co.**

The **Citizens Coal Mining Co.**, has requested a rehearing in its case in which the commission recently found that rates on bituminous coal from Citizens Mines A and B in the Springfield, Ill., district to various destinations during Federal control were not unreasonable.

The commission has dismissed the complaint of the **Northwestern Pennsylvania Coal Operators' Association** which related to rates on coal from mines on the Bessemer & Lake Erie and Western Allegheny railways to markets in New England located on the Boston & Maine and New Haven railways. The complainants had asked for the same rates as were in effect from mines on the B. & O. The commission said the proceeding had been satisfied to the complainants. Similar action has been taken in the complaint of the **Republic Coal Co.**, relating to rates on soft coal from West Frankfort, Ill., to La Crosse, Wis.

The commission has directed the Director General of Railroads to refund \$560 to the **Michigan Builders Supply Co.**, because of an unreasonable rate charged on anthracite from points in Pennsylvania to Detroit.

The **Virginian Railway** has leased the **Virginia & Western Ry.**, operating over 14 miles in the coalfields around Maben, W. Va., and will operate it as an adjunct to the Virginia. It is expected to develop large additional coal fields for this line, which has its outlet at Sewalls Point.

The **Baltimore & Ohio R.R. Co.** has placed an order for 50 new cars for use in passenger train service, including 40 coaches, 2 dining cars, 3 combination baggage and mail cars and 5 postal cars. This equipment will be constructed by the Pullman Company, of Chicago, for delivery late in August or early in September.

The I. C. C. has decided that the rates on run of mine bituminous coal from mines in the Brazil, Ind., district to the plant of the **Hydraulic Press Brick Co.**, at Brazil during Federal control were unreasonable because they exceeded 45c. a ton.

The I. C. C. has assigned for further hearing the complaint of the **Wasatch Coal Co.**, which assailed certain intrastate rates

during Federal control as unreasonable. The railroads had moved to dismiss the complaints because of failure to specifically allege violations of the acts administered by the I. C. C. The commission says these complaints sufficiently and fairly present for its consideration and determination alleged violations of Federal laws which the commission has jurisdiction to administer and orders the case set for further hearing.

The commission has decided that rates on bituminous coal from West Clinton, Ind., to Ottumwa, Ia., and reconsigned to various points in Iowa and Nebraska are not unreasonable.

Obituary

Captain R. H. McLean, master of the American Str. Sewall's Point of the Castner, Curran & Bullitt coal fleet, died in New York recently. He was the ranking master of this company, having served for 20 years.

Frank Watson Bale, former general freight agent for Buffalo, Rochester & Pittsburgh R. R., and for more than thirty years a resident of Rochester died recently at his residence there. For more than 20 years Mr. Bale was connected with the B. R. & P. in different executive positions.

Shelby Kinkead, 68 years old, president of the Kinkead Coal Co., a great grandson of Isaac Shelby, first governor of Kentucky, died at his Lexington, Ky., home recently, following an illness of several months. He was one of the pioneer coal men of Lexington.

Frank H. Tillinghast, of the firm of F. H. and F. W. Tillinghast, coal dealers of Central Village, Conn., died recently at his home in that town. He had been in the coal business practically all his life.

Trade Literature

Deschanel Cableway Bulletin—Deschanel Engineering Corp., 90 West St., New York City. Pp. 6; 8½ x 11 in.; illustrated. Describes the use of the cableway for unloading material directly from railroad cars, and barges to ground storage, other secondary storage, or direct to the boiler house bunkers and coal bins.

Locomotives.—Geo. D. Whitcomb Co., Rochelle, Ill. Bulletin 2209. Pp. 15; 7½ x 10½ in.; illustrated. Contains a short sketch of the history of the company and its facilities. The photographs shown include locomotives built by the company in the early days of its existence, those used during the war, permissible locomotive for use in gaseous mines and present 12-ton gasoline locomotive for industrial use.—Advertiser.

Worm-Drive, Storage Battery Locomotives. Geo. D. Whitcomb Co., Rochelle, Ill. Bulletin 2210. Pp. 15; 7½ x 10½ in.; illustrated. Describes different sizes of worm drive locomotives, with their separate parts.—Advertiser.

Whitcomb Six-Ton, Positive Gear Drive Locomotive. Geo. D. Whitcomb Co., Rochelle, Ill. Bulletin 2212. Pp. 15; 7½ x 10½ in.; illustrated. Designed originally for road work, this locomotive is now used in many other industries.—Advertiser.

Coke Quenching Cars. The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin No. 70. Pp. 8; 8½ x 11 in.; illustrated. Describes how, on account of the destructive effects which ordinarily shorten the life of coke quenching cars, these cars are designed to withstand the heavy work put on them.

Publications Received

Schedule 10-A, Procedure for establishing a list of permissible electric hand lamps, trip lamps, animal lamps and rescue lamps for use in gaseous mines, has just been issued by the United States Bureau of Mines. The schedule contains information regarding fees, character of tests and conditions under which tests and inspections of these types of lamps will be made by the Bureau of Mines at its Pittsburgh, Pa., experiment station.

Specifications for Petroleum Products adopted by the Interdepartmental Petroleum Specifications Committee. Bureau of Mines,

Washington, D. C. Technical Paper 305. Pp. 40; 6 x 9 in.

Production of Gasoline by Cracking Heavier Oils, by E. W. Dean and W. A. Jacobs. Bureau of Mines, Washington, D. C. Technical Paper 258. Pp. 56; 6 x 9 in.; illustrated. Describes results of experiments of cracking processes, with tables.

Pulling Together, by John T. Broderick, with introduction by Charles P. Stelmets, Ph.D., Robson & Adey, Schenectady, N. Y. Pp. 141; 5 x 8 in. An interesting conversation supposed to have taken place in a Pullman smoking compartment on industrial management.

Our Unconscious Mind—And How to Use It, by Frederick Pierce. E. P. Dutton & Co., 681 Fifth Avenue, New York City, \$2. Pp. 323; 5 x 8 in.

Simplified Uniform Accounting System for Retail Coal Merchants.—Published by National Retail Coal Merchants Association, Phila., Pa.

The Sugar-Tube Method of Determining Rock Dust in Air, by A. C. Fieldner, S. H. Katz and E. S. Longfellow. Department of the Interior, Bureau of Mines. Technical paper 278. Pp. 42; 6 x 9 in.; illustrated.

Coal Resources of District IV, by Gilbert H. Cady, Illinois Mining Investigations. Bulletin 26. Pp. 247; 6 x 9 in.; tables, maps and charts. Prepared under a cooperative agreement between the Illinois State Geological Survey Division, the Engineering Experiment Station of the University of Illinois and the U. S. Bureau of Mines.

Coal, A Few Things the Public Wants to Know.—Published by the Illinois Coal Operators' Association, Chicago, Ill. Pp. 24; 9 x 4 in. Contains reprints of press releases during the last six weeks compiled by the Association.

Bulletin of the Carnegie Institute of Technology, Series 17, No. 1. Published monthly by the Carnegie Institute of Technology, Pittsburgh, describing the co-operative mining courses of the Department of Mining and Metallurgy, College of Engineering.

Tenth Annual Report of the State Inspector of Mines for New Mexico for the year ending Oct. 31, 1921. Pp. 65; 6 x 9 in.; tables.

The following-named publications have recently been issued and may be obtained by applying to the Bureau of Mines, Washington, D. C.:

Serial 2306, Momentary heating of inflammable coal dusts.

Serial 2308, Safety of mine-type telephones.

Serial 2309, Compressed-air blowers as an aid to metal-mine ventilation.

Serial 2310, Growing need for preservation of mine timber.

Coming Meetings

Colorado and New Mexico Coal Operators' Association. Annual meeting June 21 at Denver, Col. Secretary, F. O. Sandstrom, Boston Building, Denver, Col.

The American Wholesale Coal Association will hold its annual convention at Detroit, June 1 and 2. Secretary, G. H. Merryweather, Union Fuel Bldg., Chicago.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, J. K. Rittenhouse, Engineers' Club Bldg., Philadelphia, Pa.

The twenty-seventh annual convention of the **Illinois and Wisconsin Retail Coal Dealers' Association** will be held at the Hotel Highland, Delavan Lake, Delavan, Wis., June 13, 14, 15. Secretary I. L. Runyan, Chicago, Ill.

The annual convention of the **Pennsylvania Retail Coal Merchants' Association** will be held at Trenton, N. J., June 7 and 8.

American Institute of Chemical Engineers will hold its summer meeting at Niagara Falls, Can., June 19-22, with headquarters at the Clifton Hotel. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

Southwestern Interstate Coal Operators Association will meet June 13 at 519 Keith & Perry Bldg., Kansas City, Mo. Secretary, W. L. A. Johnson, Kansas City, Mo.

Illinois Mining Institute will hold its summer meeting June 8, 9 and 10 on the Mississippi River, the boat leaving St. Louis, Mo., on June 8. Secretary, Martin Bolt, Springfield, Ill.